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AIR FORCE PROCEDURE FOR PREDICTING NOISE AROUND AIRBASES: NOISE EXPOSURE MODEL (NOISEMAP) TECHNICAL REPORT

Carey L. Moulton

WYLE RESEARCH
128 MARYLAND STREET
EL SEQUNDO, CA 90245

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This technical report has been reviewed and is approved for publication.

Peter A. Lurker

PETER A. LURKER, Lt Col, USAF, BSC
Acting Director
Biodynamics and Biocommunications Division
Armstrong Laboratory

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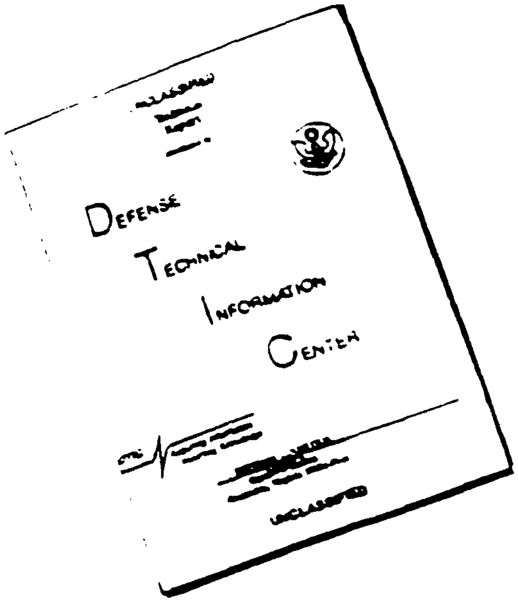

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CAREY L. MOULTON

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128 Maryland
El Segundo CA 90245-4115

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13. ABSTRACT *(Maximum 200 words)*
NOISEMAP was the name given to the original Fortran program, developed for the USAF in the mid 1970's to calculate total noise exposure around military airbases. NOISEMAP now refers to a suite of programs that automate the noise exposure calculation process from operations data collection to final contour plotting. The noise calculation part of this suite of programs is now called NMAP 6.1 (the 6.1 being the current version number). New algorithms for calculating lateral attenuation and an expanded database are included in this version 6.1. NOISEMAP has also been rehosted from operation on a CDC mainframe computer to run on a desktop microcomputer (IBM compatible). This report is a technical overview of the algorithms used in NMAP 6.1. Most of these algorithms were originally outlined by Dr William Galloway in the report "Community Noise Exposure Resulting from Aircraft Operations: Technical Review" published in November 1974. This report covers all the current algorithms used in NMAP 6.1 and includes an example computation for a single aircraft takeoff and ground runup operation.

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1.0 INTRODUCTION

This report is intended as a technical overview of the algorithms used in NMAP 6.1 to calculate noise exposure. Most of these algorithms were developed during the inception of the NOISEMAP program which was conceptually outlined by Dr. William Galloway in 1974.[1] Some of the algorithms, such as the new NMAP 6.1 lateral attenuation model and the SAE lateral attenuation models, are recent additions to NOISEMAP.

NOISEMAP was the name given to the FORTRAN program, developed for the Air Force in the mid 1970's, to calculate aircraft noise exposure. This FORTRAN program is now called NMAP 6.1 (the 6.1 being the current version number), and the term NOISEMAP now refers to a suite of programs that includes several supplemental programs such as OMEGA 10.7 and OMEGA 11.3, and "new" programs (circa 1989) such as BASEOPS, MCM, and NMPLOT. The OMEGA 10.7 and 11.3 programs[2] perform the propagation extrapolations on the reference aircraft noise spectra in the NOISEFILE 6.2 database and provide as output the single event noise descriptors that NMAP 6.1 requires for its calculations. The BASEOPS program[3] allows interactive entry of the airbase operations and airfield data for NMAP 6.1 noise contour calculations. The airbase operations data from BASEOPS are then filtered by the Master Control Module (MCM) program[4] which creates the NMAP 6.1 input file (NMI). The NMI file is a processing template which is a combination of processing instructions and reference data that drives the NMAP 6.1 contour calculations. After the contour calculations are complete the NMPLOT program[5] is used to plot the resulting contours along with user selectable airbase information that are entered into BASEOPS.

The NMAP 6.1 program is an effective method of determining noise exposure due to aircraft operations, and includes both military and civilian aircraft in its aircraft reference noise database. This report provides detailed information on the crucial and core algorithms relating to noise exposure calculations so that current users can have a better technical understanding of NMAP 6.1, and that future developers of NOISEMAP will have an adequate foundation for extending the program.

Section 2.0 of this report provides the details on all of the noise exposure calculations in the NMAP 6.1 program. These noise exposure calculations are the end product of a series of operations that include flight segmentation, determining when and where specific noise modules apply (e.g., takeoff roll model, altitude thrust correction, airspeed correction and user-entered sound level adjustments), grid searching, and finally the the noise exposure calculations themselves. The bulk of NMAP's time is spent processing flyover operations because of the complexity of the

geometry involved and the complexity of the merged flight segments. Runup operations on the other hand, are much simpler in comparison because of their simpler geometry and the fact that they are single power setting operations. Included at the end of many sub-sections in Section 2.0 are the results of a sample case which are intended to show how each algorithm has been implemented in MNAP 6.1. Section 3 covers some of the unique features of NMAP 6.1. Included in this section is the complete sample calculation with all the supporting data, and a sample contour plot. Also included in Section 3 are tables of all of the aircraft that have reference noise data in the NOISEFILE 6.2 database. This database currently holds 304 aircraft flyover, 398 aircraft runup, and 220 civil aircraft noise spectra. Appendix A contains a program flowchart of NMAP 6.1, and Appendix B contains a summary of all of the subroutines and common blocks in the NMAP 6.1 program.

2.0 NOISEMAP NOISE CALCULATIONS

2.1 Noise Descriptors

The noise descriptors used for noise exposure calculations are the following:

DNL - Day-Night Average Sound Level,
CNEL - Community Noise Equivalent Level,
NEF - Noise Exposure Forecast,
WECPNL - Weighted Equivalent Continuous Perceived Noise Level.

These descriptors cover a broad range of analysis requirements for land use planning in the United States, Canada and Europe,[6] with NEF being used in Canada and the WECPNL metric being predominantly if not exclusively used in Europe.

The DNL metric is the default metric used by the MCM program when compiling the input file for the NMAP 6.1. However, any of the other metrics can be chosen by making a selection in the MCM's RUN-Run options menu.

2.1.1 Day-Night Average Sound Level (DNL)

The DNL descriptor is based on the energy averaged A-weighted sound level integrated over a 24 hour period, with a penalty applied to night-time operations between 2200 hrs and 0700 hrs local time. NMAP 6.1 uses the following relationships to determine DNL exposure:

FLYOVER:
$$L_{dn} = L_E + 10 \cdot \log_{10}(N_{day} + 10 \cdot N_{night}) - 49.4$$

RUNUP:
$$L_{dn} = L_A + 10 \cdot \log_{10}(N_{day} \cdot t + 10 \cdot N_{night} \cdot t) - 49.4$$

where	L_{dn}	=	Day-Night Average Sound Level (DNL)
	L_E	=	Sound Exposure Level (SEL) in dB,
	L_A	=	A-weighted sound level in dB,
	N_{day}	=	number of operations (takeoff or landing) between 0700 hrs and 2200 hrs local time,
	N_{night}	=	number of operations (takeoff or landing) between 2200 hrs and 0700 hrs local time,
and	t	=	the runup duration in seconds.

The SEL values are interpolated from tables of SEL values versus distance generated by the OMEGA 10.7 program. The OMEGA 10.7 program uses 22 distances starting at 200 ft and ending at 25,000 ft in increments based on one-third octave ratios, i.e., 200 ft, 250 ft, 315 ft, 400 ft, etc. The SEL values are generated for air-to-ground and ground-to-ground sound propagation conditions at each of the one-third octave distance increments. The OMEGA 10.7 program also corrects the reference noise spectra which are expressed in terms of the standard day conditions, for local temperature and humidity (see Section 2.7.1).

The SEL values that are calculated by OMEGA 10.7 are extrapolated from the Air Force's reference noise data file, NOISEFILE 6.2, which contains one-third octave band spectra of aircraft noise normalized to a 1000 ft distance at standard day temperature and humidity, and sea level altitude. The reference database noise spectra cover a wide range of military and civilian aircraft at selected engine power settings and flight conditions. These are processed by OMEGA 10.7 to provide the SEL values at the required set of distances, airbase meteorological conditions and aircraft flight conditions (engine power settings and airspeed) for the two propagation conditions (air-to-ground and ground-to-ground) as mentioned before. This procedure is described in more detail in Reference 2. The OMEGA 10.7 tabulations of SEL values are subsequently included as part of the NMAP 6.1 input file compiled by the MCM program.

The values of A-weighted Sound Level, AL, which are used to estimate noise exposures from aircraft or engine ground runup tests, are similarly calculated at a set of one-third octave distances from 200 ft to 25,000 ft by means of an OMEGA 11.3 program. The OMEGA 11.3 program accesses ground runup reference noise spectra in NOISEFILE 6.2 for specific aircraft or engine test facility operating at selected engine power settings. OMEGA 11.3 then generates a table of AL values for the required set of ground-to-ground propagation distances and azimuth angles relative to the aircraft or test facility's forward axis. This process is also described in detail in Reference 2.

For both the flyover and runup events, the number of operations and runup duration are entered into the BASEOPS program and are carried through the MCM into the NMAP input file.

2.1.2 Community Noise Equivalent Level (CNEL)

The CNEL descriptor is similar to DNL except that there is an additional penalty for operations occurring between the evening hours of 1900 and 2200 hrs. This breaks the number of noise exposure periods in 24 hours into three time periods, i.e., 0700-1900, 1900-2200, and 2200-0700 hrs. The CNEL was initially developed by the State of California as the standard to be

used for noise planning and analysis around airports, but is also used for environmental analysis of other sources of noise. NMAP 6.1 uses the following relationships to determine CNEL exposure:

FLYOVER:
$L_{CNE} = L_E + 10 \cdot \log_{10}(N_{day} + 3 \cdot N_{eve} + 10 \cdot N_{night}) - 49.4$

RUNUP:
$L_{CNE} = L_A + 10 \cdot \log_{10}(N_{day} \cdot t + 3 \cdot N_{eve} \cdot t + 10 \cdot N_{night} \cdot t) - 49.4$

where L_{CNE} = Community Noise Equivalent Level

N_{eve} = number of operations between 1900 hrs and 2200 hrs.

All the other parameters are as listed for DNL.

2.1.3 Noise Exposure Forecast (NEF)

The NEF descriptor is based on the Effective Perceived Noise Level (abbreviated EPNL, with the letter symbol L_{EPN}, as a time-integrated single event descriptor) and the non-time integrated, tone-corrected Perceived Noise Level (abbreviated PNLT, with a letter symbol L_{PNT}, as the descriptor for instantaneous noise levels). NMAP 6.1 uses the following relationships to determine NEF exposure:

FLYOVER:
$NEF = L_{EPN} + 10 \cdot \log_{10}(N_{day} + 16.67 \cdot N_{night}) - 88.0$

RUNUP:
$NEF = L_{PNT} + 10 \cdot \log_{10}(N_{day} \cdot t + 16.67 \cdot N_{night} \cdot t) - 98.0$

where L_{EPN} = Effective Perceived Noise Level,

L_{PNT} = Perceived Noise Level, Tone-Corrected

and the other parameters are as listed as for DNL.

The EPNL value is obtained from tables of EPNL flyover noise versus one-third octave distances. corrected for temperature and humidity. These tables are generated by the OMEGA 10.7 program in a similar manner as described for the DNL calculations. The PNLT values are obtained from PNLT versus one-third octave distances generated by the OMEGA 11.3 program, also as described for the DNL calculations.

2.1.4 Weighted Equivalent Continuous Perceived Noise Level (WECPNL)

The WECPNL descriptor[7] is based on PNLT and is used frequently in Europe. In the NMAP 6.1 program WECPNL is implemented as a three period day. NMAP 6.1 uses the following relationships to determine WECPNL exposure:

FLYOVER:
$$WECPNL = L_{EPN} + 10 \cdot \log_{10}(N_{day} + 3 \cdot N_{eve} + 10 \cdot N_{night}) - 39.4$$

RUNUP:
$$WECPNL = L_{PNT} + 10 \cdot \log_{10}(N_{day} \cdot t + 3 \cdot N_{eve} \cdot t + 10 \cdot N_{night} \cdot t) - 49.4$$

where L_{EPN} and L_{PNT} are defined as for NEF above, and N_{day}, N_{eve} and N_{night} are day, evening and night operations respectively.

The L_{EPN} and L_{PNT} values are obtained as described for the NEF descriptor.

2.2 Flight Segment Addition and the Effects on Grid Exposure

2.2.1 The Flight Segmentation Concept

One of the first major operations that NMAP performs, when processing the input file, is to formulate a three-dimensional model of the aircraft flight parameters entered into the NMAP input file (NMI file). This aircraft flight profile model is constructed from the power, altitude and ground track coordinates which are entered as separate profiles in the NMI file. NMAP 6.1 (and all previous versions of the program) used this segmentation scheme in order to model the geometry of the aircraft operations.

NMAP 6.1 uses these three profiles, as stated before, to build one flight profile based on the three parts. The final aircraft flight profile is based primarily on a power profile with the altitude and ground track profiles being used to further segment the merged flight profile. When the aircraft flight profile has been merged, it will have all the coordinates from the power profile as well as any of the unique coordinates that may exist in the altitude and ground track profiles.

The specifics of the segmentation scheme are as follows:

(1) Elements of the power profile are used as the primary coordinates of the merged flight profile;

(2) any additional coordinates in the altitude and ground track profile that do not coincide with coordinates at which changes in the power profile are made, are added to the emerging flight profile;

(3) the emergent flight profile is then an accumulation of all the distinct segments in the altitude, power and ground track profiles.

At this point three terms need to be specifically defined.

- Merged flight profile: A merged flight profile is the resultant combination of all the segments of power, altitude and ground track profiles.
- Flight segment: A flight segment can be considered as the power segment, or that portion of the flight profile that is dominated by a particular power setting.
- Subflight: one or more subflights may occur within a flight segment which are contributions from the altitude and ground track profiles. These subflights may occur wherever there are changes in the altitude and ground tracks, such as altitude changes or turns, that do not coincide with changes in the power profile.

2.2.2 <u>Flight Segment Addition</u>

By segmenting the flight profile the problem now arises of maintaining a continuum where the individual flight segments come together. This problem is handled by the grid searching algorithm (as outlined in section 2.3.2). To synopsize this algorithm, in the context of addition of the segmented flight path, the following points can be made:

(1) The search for grid points of significant noise exposure are always conducted from the beginning and midpoints of each flight segment.

(2) The grid point search extends both forwards and backwards from the beginning and midpoints of each segment, and ends when the calculated exposure falls below the exposure cutoff value or the grid boundary is encountered.

(3) The contributions from each of the segments are cumulatively added to the total grid point exposure, but only if the calculated (new) noise exposure is above the exposure cutoff value.

In this way the exposure contributions from each of the segments are added together to maintain continuity.

2.2.3 Effects on Grid Exposure

The exposure at any grid point is a cumulative sum of all of the contributions of all of the segments in the merged flight path. This can be expressed mathematically for any one grid point as:

$$\text{Grid Point (x) Exposure} = \sum_{i=1}^{n_{seg}} E_{SEGi} \tag{1}$$

where n_{seg} = the number of segments for a given flight,

E_{SEGi} = the calculated exposure for the ith segment in terms of energy, i.e., $10^{(L_{Eseg}/10)}$ or $10^{(L_{EPNseg}/10)}$. Note also that the segment exposure is itself the sum of all the subflight noise exposures within each segment.

2.3 Grid Points - Layout and Spacing

2.3.1 Noise Grid Layout

The grid of noise observer locations that NMAP 6.1 uses to generate noise contours is shown in Figure 1. The grid is 100 by 100 points square and is not resizable nor can it be rotated. The grid spacing is variable, however, thus allowing a coarse or refined contour analysis and to allow coverage over larger land areas. The grid origin (or airfield origin) is also relocatable relative to the airfield runways thus allowing some optimization (or weighting) for areas around the airbase that have a larger volume of operations. The grid is always aligned with a true north orientation.

At the default grid spacing of 1000 feet (304.8 meters) the length of each side of the NMAP grid is 99,000 ft (30,175 meters). This is considered large enough to cover the entire airbase or airport traffic areas for most, if not all, airbases or airports.[8]

Grid point numbering starts from number one at the grid origin and at which point the cumulative grid distance increment is zero. Grid point numbering ends at grid point number 100 at which point the cumulative grid distance increment is 99,000 feet (at the default grid spacing of 1000 feet). Since the grid is square this orientation is consistent in both the x and y directions.

As a convenience to the user, the nominal center of the grid is located at 100,000 ft and 200,000 ft in the x and y directions respectively. This almost always guarantees that the user will be able to define specific points, runup pads and runways in positive x and y coordinates. However, when the program handles these data, it subtracts 50,000 ft and 150,000 ft from the x and y coordinates respectively. This will become apparent in the sample calculation in Section 3.0.

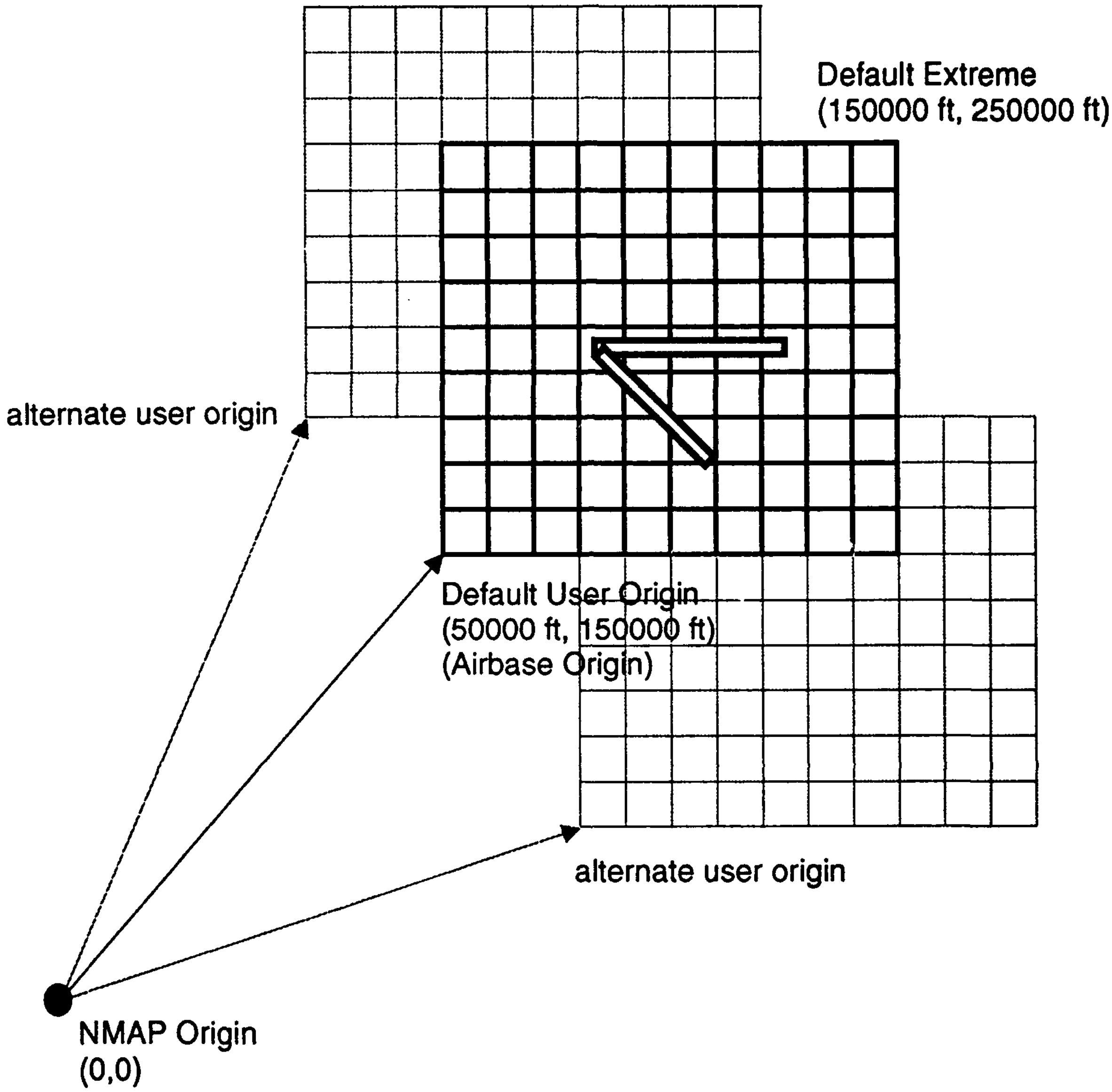


Figure 1. NMAP 6.0 Default Grid Placement as seen by the User. (The figure shows how the grid can be moved relative to the airbase runways in the user coordinate system.)

2.3.2 Finding Grid Points of Significant Exposure

A grid point of significant exposure is one where the calculated noise exposure is at or above a minimum threshold based on the noise descriptor being used. The search for grid points of significant exposure is accomplished by using the aircraft ground track as the centerline of the noise exposure. For each segment in the merged flight track (see section 2.2 for an explanation of segments), the beginning point and the mid-point of the segments, are used as initiation points in the grid search as shown in Figure 2. From each of these initiation points a search is conducted for those grid points that have a calculated exposure value at or above the exposure cutoff limit, or is within the grid array boundary.

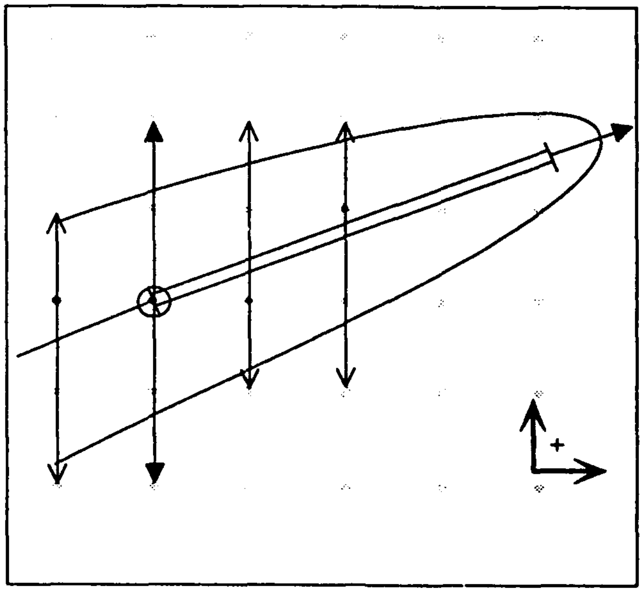
The search from an initiation point is conducted along the y-ordinate, above and below that initiation point only. In order to find all the grid points of significant exposure new initiation points must be chosen along the x-ordinate, to the left and right of the current initiation point. These new points are called "reference points". To clarify the terminology, note that an initiation point is in fact a reference point, with the distinction that it coincides with either the beginning or midpoint of a segment.

Each new reference point is determined using the following rules:

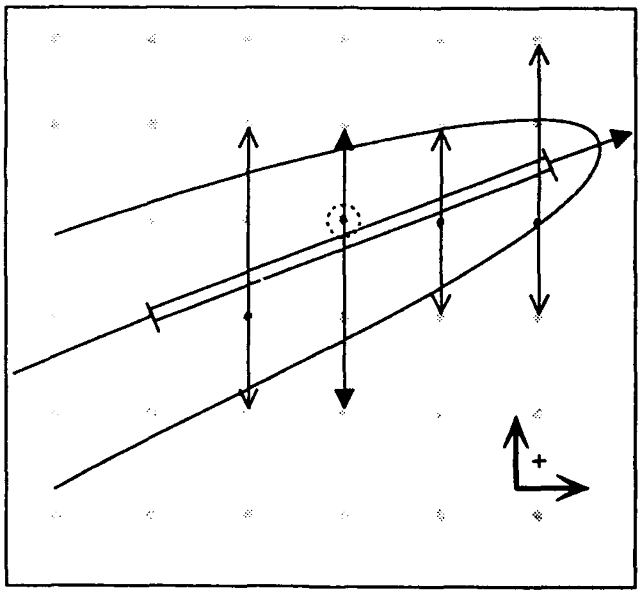
(1) The new reference point x-coordinate is located to the left or right of the current reference point, by an amount equal to the grid spacing being used.

(2) The y-coordinate of the new reference point is located at a grid point closest to the center of the extremes of the ordinate traversal of the last reference point.

From the first initiation point the search proceeds up and down in the y-direction until the grid boundary or exposure cutoff limit is reached, whichever comes first. When a vertical limit has been reached, a new reference point is chosen that is left of the initiation point, and whose ordinate is the midpoint of the ordinate traversal of the last reference point. Traversal of the new reference point proceeds up and down in the y-direction until the exposure cutoff or grid boundary is reached. New reference points are chosen in this direction until exposure cutoff or the grid boundary is reached in the x-direction. At the end of the search to the left of the initiation point a new reference point is then chosen to the right of the initiation point, and the search proceeds as described above, until the exposure cutoff or grid boundary is reached in this x-direction.



Grid Search from the Beginning Initiation Point.



Grid Search from the Mid Point Initiation Point.

Legend

- Grid search from segment beginning or mid point location (initiation point)
- Grid search from reference points
- New reference points
- Beginning initiation points
- Mid-point initiation point
- Flight segment
- Grid Points

Figure 2. NMAP 6.0 Grid Searching Algorithm Used to Find Grid Points of Significant Exposure

When the exposure cutoff or grid boundary has been reached (both left and right of the first initiation point) then the procedure is repeated for a new initiation point closest to the middle of the current flight segment (see Section 2.9 for the exposure cutoff values).

The algorithm for the grid search as described above results in a dynamic tracking of the noise exposure but runs the risk of sampling the same point more than once, particularly during the grid search from the midpoint of the segment. To avoid the error of over-exposing a particular point, the sign of the noise exposure value is used as a flag. During the grid search the sign of the value of an updated grid point is reversed after a computation has been made. On completion of the grid search the negative exposure values are sought out and their signs restored. Before the grid points are updated they are also checked to see if the value is positive (i.e., > 0.0).

The limits of the grid traversal (i.e., the max x and y and then min x and y distances travelled) are also stored in memory, so that at the end of a flight segment grid search, the bounds of the negative grid points values can be more easily identified and and their values restored.

2.4 Grid Point Noise Exposure Calculations

2.4.1 Flyover Operations

Aircraft noise that is due to flyover operations is covered by two algorithms in the NMAP 6.1 program. One algorithm covers straight flight segments and the other covers curved segments.

Basically, both of these algorithms take the reference noise data and any of the generalized noise corrections at each end of a subflight and extrapolates them to the closest point of approach to the observer location. The generalized noise corrections include the takeoff roll correction, Δ_6, altitude thrust adjustment, airspeed, and user input level adjustments called DSEL. These corrections are explained further in Section 2.4.3.

2.4.1.1 Straight Segments

The calculation for the noise exposure due to a straight line segment is determined by the following formulation:

$$\text{Noise exposure} = E_{rc} \cdot |C_y|. \qquad (2)$$

where E_{rc} = $10^{(L_{ref}/10)}$ at the closest point of approach,

L_{ref} = the noise exposure value, interpolated or extrapolated to the closest point of approach to the subflight, from the noise exposure tables generated by OMEGA 10.7

C_y = an exposure factor, which is based on the geometry of the aircraft attitude in relation to a direct overflight, and includes generalized corrections factors.

The following equation for C_y is a numerical formulation that modifies the noise exposure value from an infinite line source to a finite length (see Figure 3):

$$C_y = \left\{ I_c \cdot \frac{(\sin(COA) - \sin(COB))}{2} \right\} + \left\{ \left[\frac{(F_a - F_b)}{AB} \cdot OC \right] \cdot \frac{(\cos(COB) - \cos(COA))}{2} \right\} \quad (3)$$

where I_c = a generalized correction factor that is interpolated to the closest point of approach (see also F_a and F_b). This correction factor can include any model that should be applied within a merged flight segment. Current corrections are listed in Section 2.4.3.

COA = the angle subtended by the closest point of approach (CPA) to the beginning of the flight segment,

COB = the angle subtended by the CPA to the end of the flight segment,

F_a = the value of the generalized correction factor at the beginning of the flight segment,

F_b = the value of the generalized correction factor at the end of the flight segment,

OC = the slant range distance or the distance between the CPA and the observer location,

AB = the signed length of the segment between points A and B as determined by the difference of AC–BC. This result maintains the sign convention discussed below,

BC, AC = the signed distance betweeen points A and C and points B and C, respectively,

Sign Convention = the angles COA and COB are given the following sign convention. The angle is positive if the opposite leg of the right triangle formed from the CPA point to the segment point (A or B) is in the same direction as the flight, or negative if opposite. It therefore follows that both COA and COB are positive in figure 3.

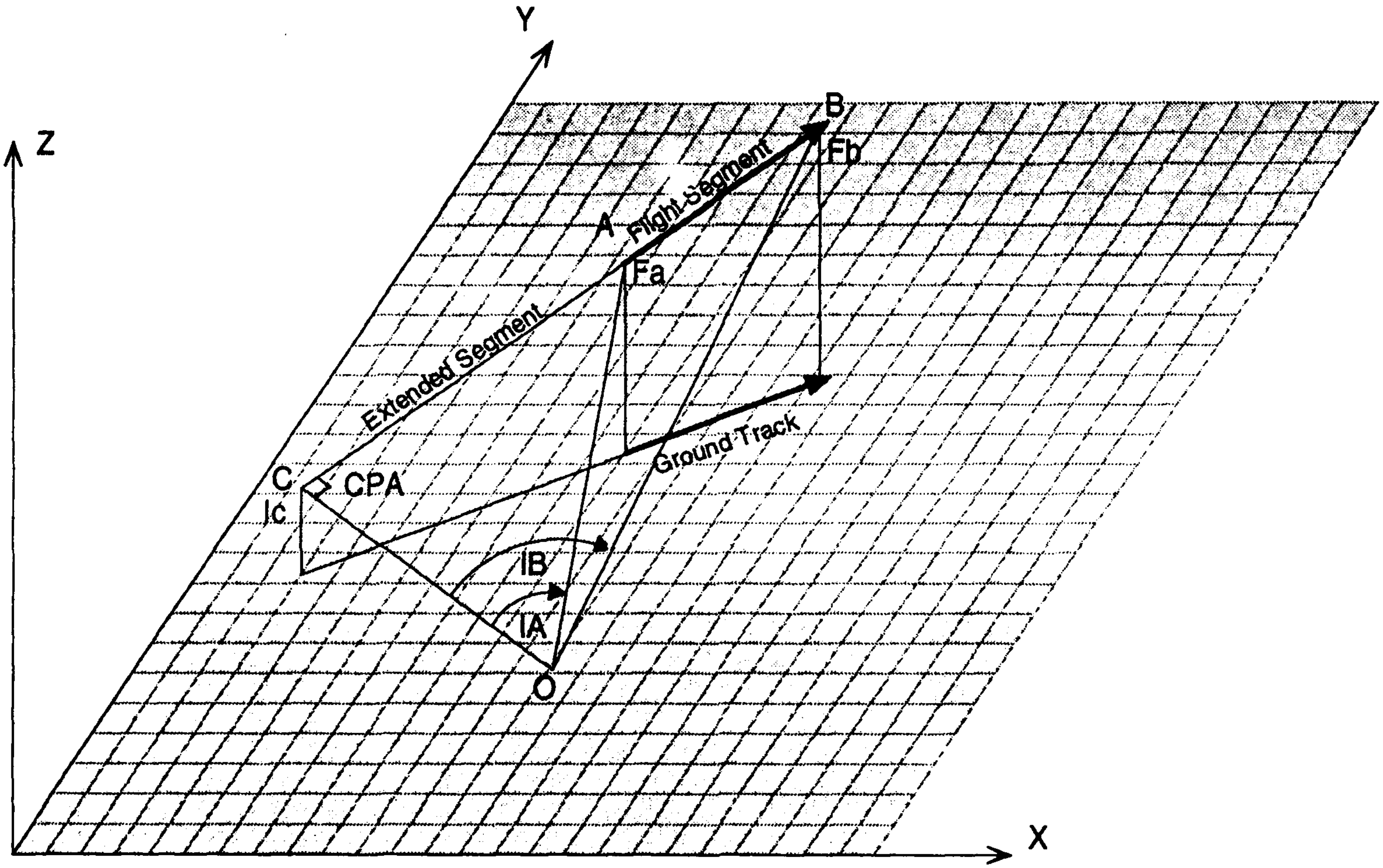


Figure 3. Geometry for the Algorithm Used to Determine Flight Segment Noise Exposure Integral

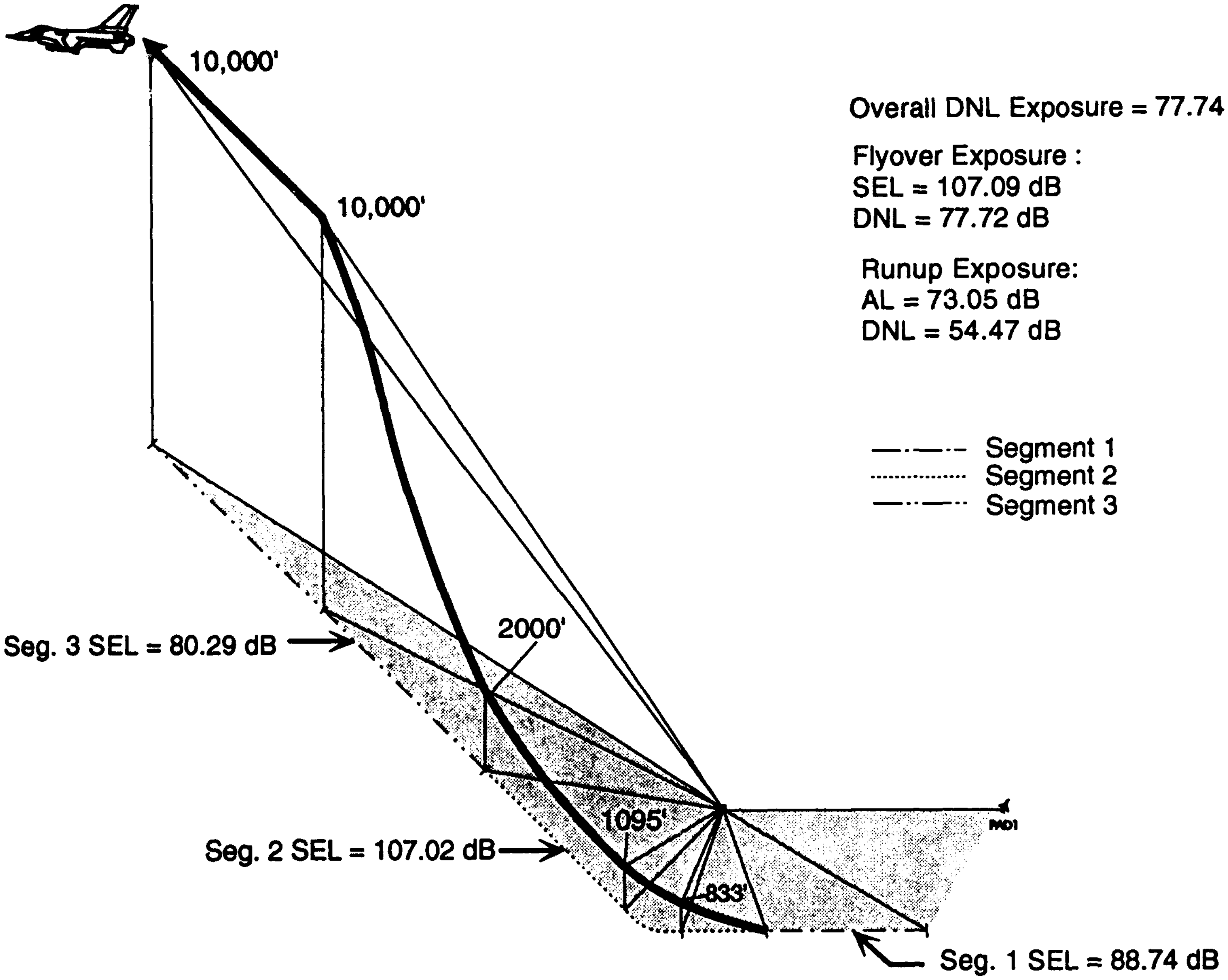


Figure 4. Ground Track Geometry and Resulting Exposures for Sample Case.

Figure 4 shows the ground track geometry and what might be the actual flight track of the sample case after NMAP 6.1 has determined the power and subflight segments. The figure also shows the resulting sound exposures for each segment. The segment sound exposures are used as factors for the reference noise data that are appropriate to the geometry for the particular power segment. The sound exposure for a segment with a single subflight can be calculated straight away from the formulation listed above. The calculations in Section 3.1 for the first segment in the sample case show exactly how that is done.

For segments with multiple subflights a slight deviation is necessary. The basic formulation stays the same except that the relative sound exposure factors are accumulated over the segment using a normalization of the form $|C_{ysub}|/(SL_{sub})^2$.

When all of the subflights have been determined then the slant distance associated with the largest exposure factor value in the segment can be found. The slant distance to the associated subflight, SL_{dom}, is used to determine the reference exposure value, L_{rcf}, as well as to calculate the sum of the exposure factors.

The resulting normalized factor is expanded as follows:

$$\left(\sum_{i=1}^{Nsub} |C_{yi}| / SL_{sub}^2\right) \cdot SL_{dom}^2 \tag{4}$$

where N_{sub} = Number of subflights

SL_{sub} = Slant range between the observer and the CPA of the subflight

SL_{dom} = Slant distance to the subflight with the largest C_y.

The data in Section 3.1 will show these results in segments 2 and 3 of the sample calculation.

2.4.1.2 Curved Segments

The noise exposure due to an aircraft executing a turn is approached in a similar manner as explained above for straight line segments. The calculated grid point noise exposure is therefore a product of the reference noise level extrapolated to the observer distance and a factor to account for the aircraft attitude. This is expressed, as before, as:

$$\text{Noise exposure} = E_{rc} \cdot |C_y| \tag{5}$$

The value of E_{rc} is the same as for Eq. 2. The calculation for the value of C_y is slightly more complicated for curved segments. C_y is determined from the following formulation based on the geometry shown in Figure 5:

$$C_y = R \bullet SL^2 \left(\frac{\sec\beta}{\det}\right) \left\{ F_a \left[\frac{(2C_2\theta + C_1)}{\mathrm{den}} - \frac{C_1}{\sqrt{C_0}}\right] + \left[\frac{(F_a - F_b)}{\theta}\right] \left[\frac{(C_1\theta + 2C_0)}{\mathrm{den}} - 2\sqrt{C_0}\,\right] \right\} \quad (6)$$

where R = the radius of curvature of the aircraft turn,

SL = the slant distance between the middle of the curved segment and the observer,

$\sec\beta$ = $\sqrt{1 + (\tan\beta)^2}$,

$\tan\beta$ = $\frac{Z_b - Z_a}{D_b - D_a}$, where Z_a and Z_b are the altitudes at point A and B respectively, D_b and D_a are the cumulative distances from the start of roll along the ground track to the points A and B respectively,

C_0 = $X_0^2 + Y_0^2 + Z_a^2 + R^2 - 2 \bullet R \bullet X_0$,

C_1 = $-2 \bullet R \bullet Y_0 + 2 \bullet R \bullet \tan\beta \bullet Z_a \bullet \mathrm{symm}$

C_2 = $R^2 \bullet \tan\beta^2 + 2 \bullet R\,(0.47483 \bullet X_0 + \mathrm{symm} \bullet 0.1269 \bullet Y_0)$

symm = +1 for left, -1 for right turn,

X_0 = the X coordinate of the observer in the coordinate system where the center of curvature of the turn is the origin, and the radial vector to the first point of the segment, in the ground plane, is along the positive x-axis,

Y_0 = the Y coordinate of the observer in the coordinate system outlined above,

den = $\sqrt{|C_2\theta^2 + C_1\theta + C_0|}$,

det = $4C_0C_2 - C_1^2$,

F_a = the generalized correction factor at point A, at the beginning of the curved segment, as explained in Section 2.4.1.1,

F_b = the generalized correction factor at point B, at the end of the segment, see Section 2.4.1.1,

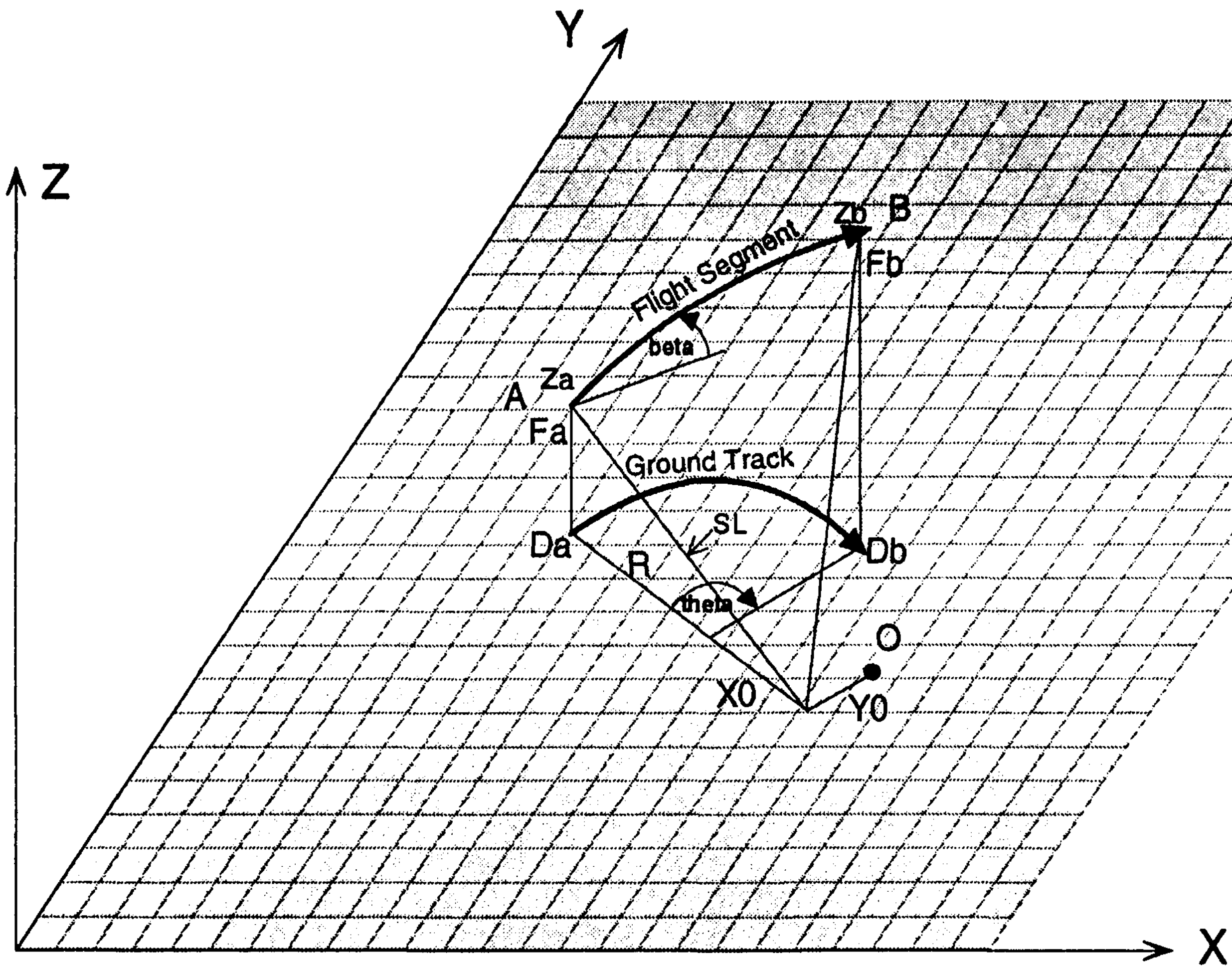


Figure 5. Geometry of the Algorithm Used to Determine Flight Segment Noise Exposure from Curved Flight Path Segments.

θ = the negative value of the arc length of the turn in radians. This value cannot exceed a magnitude of $\pi/3$ radians (60 degrees) since there is an assumption that the tangent of the angle β can be approximated by the term $\frac{Z_b - Z_a}{D_b - D_a}$ (see also the description of the variable tanβ), which is the change in altitude divided by the ground track distance between points A and B.

2.4.2 Runup Operations

The noise calculated for ground runup operations are determined in a similar manner as those for flyover, with the exception that flight segmentation rules and corrections for air-to-ground absorption are not applied.

The OMEGA 11.3 program operates on data in the NOISEFILE 6.2 and produces noise level tables appropriate to the requested noise descriptors corrected for temperature and humidity. The resulting tables are not corrected for altitude but are left in terms of sea-level altitude as is the default for NOISEFILE. The data are organized as basically 10 rows of angles, each row containing data at one-third octave increments, starting at 200 ft and ending at 25,000 ft. NMAP 6.1 interpolates and extrapolates these values to other distances and angles.

The noise exposure is determined by assuming the area of significant exposure will be bounded by the extreme edges of the cardioid shape associated with runup noise directivity patterns. The grid points within this area are searched out, and the noise exposure is calculated. If the calculated noise exposure is above the cut-off value (see Section 2.9 for the exposure cut-off values) for the selected noise descriptor then the grid point is updated by adding the calculated exposure.

The calculated exposure is obtained by determining the following:

(1) The direction in which the nose of the aircraft is pointing.

(2) The distance between the grid point (or observer location) and the center of the runup pad.

(3) The angle between the centerline of the runup pad and the line joining the center of the runup pad to the observer position.

(4) The appropriate reference noise tables from which the noise exposure will be calculated.

For runup pads, NMAP 6.1 takes item (1) directly from the input file from the AIRFLD keyword[9] and applies the magnetic heading correction before using it as the runup pad heading.

The distance between the center of the pad and the observer position is determined by transforming the NMAP 6.1 grid locations of the observer position, and the center of the runup pad, to a coordinate system with the center of the runup pad as the origin (see Figure 6). This is accomplished with coordinate translation and rotation. The observer angle is measured between the intersection of the heading of the runup pad (to which the aircraft is also aligned) and a line joining the observer position to the center of the runup pad. The length of this line is the distance to the observer.

The proper reference noise values are determined by looking up the reference table for the aircraft in question and, looking up the angle and distance closest to the angle and distance previously found, then interpolating or extrapolating both for angle and distance for the correct exposure value. Section 3.1 shows the development of the runup exposure determined for a sample case.

2.4.3 Noise Corrections

As mentioned earlier, NMAP 6.1 uses noise corrections at the end points of segments and subflights. The purpose of these noise corrections (or generalized correction factors) is to help refine the accuracy of the reference noise data. The current noise corrections are as follows:

(1) The takeoff roll Δ_6 correction scale factor[10]: The takeoff roll model is discussed in detail in Section 2.7. The model is based on a reference directivity noise level adjustment that is applied to the aircraft ground runup reference noise data and scaled by the value of $10^{(V/160\ kts)}$ at the start of roll and 1.0 at the point of rotation. V represents the actual takeoff speed and 160 kts is the value defined in Reference 10.

(2) Airspeed correction: The aircraft reference noise data is generated at discrete airspeeds entered at points of change in the flight profile. Since the reference noise data can be heavily influenced by the aircraft airspeed a correction was added to interpolate the aircraft airspeed to the closest point of approach to the observer, as is done for other noise corrections. This correction has no effect during the ground roll portion of the flight and is therefore has a value of 1.0 at the first two parts in any takeoff. The correction is also 1.0 at the landing point. At all other points the correction is based on $10^{(V/V_{ref})}$ (where V is the actual aircraft speed and V_{ref} is the takeoff or landing speed). Touch-and-go's with a

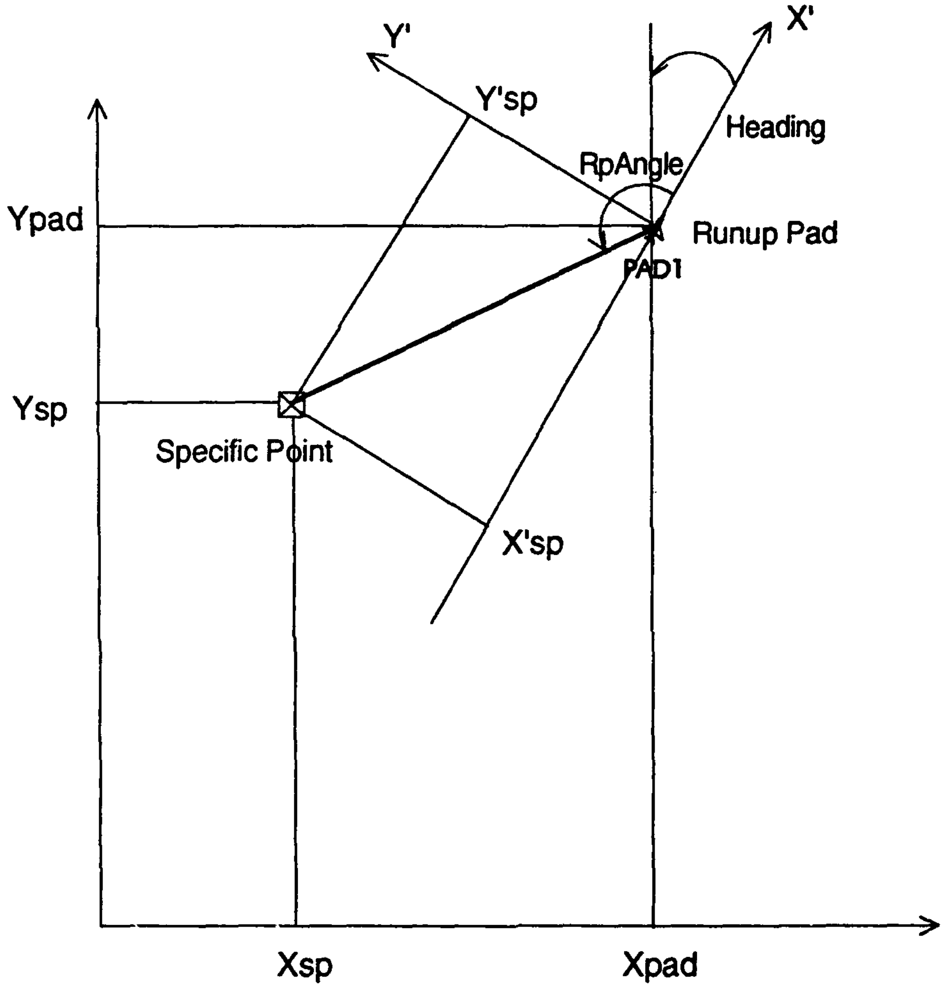


Figure 6. Runup Pad Geometry and Pad Coordinate System.
(shaded axis represent the grid coordinate system
solid axis represent the pad coordinate system.)

takeoff roll are treated similarly to takeoff, and touch-and-go's with no takeoff roll are treated similarly to landings.

(3) Altitude thrust adjustment: Above 1,000 ft altitude a correction is applied to correct the reference noise data, which are in terms of sea level conditions for altitude. The correction effectively decreases the reference noise data by 2 dB per 10,000 feet. The correction assumes that noise output is reduced as effective thrust decreases, and effective thrust decreases with altitude (reference 1). This adjustment is calculated as $10^{[(1000\text{-alt})\cdot 2E\text{-}5)]}$.

(4) User-entered noise level adjustments (DSEL): NMAP 6.1 retains a feature that was available in previous versions, which allows users to modify the reference noise data base on information that may not already be contained in NOISEMAP. The complete details on this feature may be found in Reference 8.

2.5 Specific Point Noise Exposure Calculations

Noise exposure calculations that are made at specific points on the ground that are not necessarily aligned with the NMAP grid of observer points, and are completely user-definable are called Specific Point Noise Calculations. The calculations for noise exposure at specific points are done exactly as described for grid point calculations (section 2.4) with the following exceptions:

(1) No grid searching algorithm is applied for specific points.

(2) Whereas the grid of observer locations is fixed, specific points are completely user defined and can even be located outside the NMAP grid.

(3) The maximum number of specific points is 16.

(4) The specific point calculations are performed independently of the grid point calculations thus allowing these calculations to be made without doing grid point calculations.

(5) Calculations are not subject to the cut-off values.

The process of calculating the noise exposure at specific points is the following:

(1) The X,Y coordinates of the specific points are passed to the noise exposure calculation routines instead of grid point coordinates.

(2) The noise exposure calculations for each of the merged flight segments are performed, as detailed for the grid exposure calculations. The takeoff roll and lateral attenuation models are applied where appropriate.

(3) The noise exposure at any specific point is the summation of all the contributions from all of the flight segments.

2.6 Takeoff Roll and the Effects of Forward Velocity

A takeoff roll model has been implemented in NMAP to model the sideline noise generated by an aircraft during takeoff roll. The takeoff roll model is based on a study described in detail in reference 10. The results of the study indicate that the change in the noise source emission during the takeoff roll can be approximated by adding a varying correction that is a positive adjustment at the start-of-roll, which reduces to zero at the point of rotation. Using reference 10 terminology, this adjustment is now referred to as Δ_6.

The study was based on the noise levels of a Boeing 707-300 with an operating weight of 265,205 lbs. which assures a climb speed of 160 knots based on that aircraft's performance data. Under these reference conditions a runup profile was generated with NOISEMAP 3.2 for the B707-300. The runup noise data were used to simulate an actual aircraft "rollby" using 200 foot grid spacing. The variation in Δ_6 as a function of sideline distance aircraft weight and aceleration was determined from this reference data.

The study also determined a series of adjustments that should be applied to the aircraft reference flyover data in order to model the takeoff directivity pattern. These adjustments are shown in Table 1 and represent the B-707-300 flyover noise levels adjusted to a desired directivity pattern and normalized to the reference ground-to-ground reference noise data. These reference directivity adjustments are added to all aircraft takeoffs as part of the takeoff roll model. The data in this table are 5 dB lower than the data used in Reference 9, since this 5 dB correction is now added by OMEGA 10.7 when it generates the reference noise exposure tables. NMAP 6.1 uses the following model to scale the referenced directivity pattern to the actual aircraft takeoff speed and takeoff roll distance.

Using the reference B707-300 flight parameters listed above, the correction for acceleration tak the following form:

$$\Delta accl = -5 \cdot \log_{10} \left[\left(\frac{V_{rot}}{V_{ref}} \right)^2 \cdot \left(\frac{S_{ref}}{S_{rot}} \right) \right] \tag{7}$$

relative to the acceleration of the reference B707-300. However, the correction relative to a V_{rot} will require the addition of the difference between the V_{ref} of 160 kts, leaving the final correction as:

$$\Delta_6 = -5 \cdot \log \left[\left(\frac{V_{rot}}{V_{ref}} \right)^2 \cdot \left(\frac{S_{ref}}{S_{rot}} \right) \right] + 10 \cdot \log_{10} \left[\left(\frac{V_{rot}}{V_{ref}} \right) \right] \tag{8}$$

This Δ_6 value is then used to adjust the reference takeoff directivity pattern from the B707-300 to an approximation of the actual aircraft. The study cited did make calculations for two aircraft (a B707-300 with a different takeoff weight and an F-104) with reasonable results. The model was also validated against measured data also with reasonable results.

At the time of the development of the original takeoff roll model, V_{rot} would almost always differ from the noise data at reference speed V_{ref}. Currently, the OMEGA 10.7 program generates the noise data set for the input V_{rot} speed. The Δ_6 term therefore becomes:

$$\Delta_6 = -5 \cdot \log \left(\frac{S_{ref}}{S_{rot}} \right) \tag{9}$$

where S_{ref} = 4779 ft which is the ground roll distance for the referenced B-707 aircraft.

Some of the assumptions of the NMAP 6.1 takeoff roll model, as stated in Reference 10, are as follows:

(1) The effects of forward velocity on the directivity pattern of the aircraft engine in question will not significantly affect the overall noise levels for the takeoff, and are thus ignored.

(2) The acceleration of the aircraft is assumed to be constant.

(3) The directivity pattern of the aircraft at the start-of-roll position (takeoff configuration) is that for a static full-power runup.

To implement this takeoff roll model in NMAP 6.1, the following actions are performed by the program.

(1) A directivity pattern is constructed based on the reference B707-300 directivity offset shown in Table 1. This is done by adding these offsets to the reference ground-to-ground data for the takeoff power condition of the aircraft in question. In this way a reference noise table is built of level versus angle versus one-third octave distance increment.

(2) Once the reference directivity pattern has been created, then the noise exposure for takeoff roll is calculated using the same procedures as for the runup exposure calculation.

(3) The calculated takeoff roll runup exposure is then added to the "flight" exposure, that is, the exposure calculated strictly from the aircraft flyby.

1/3 Octave Dist. Angle	200	250	315	400	500	630	800	1000	1250	1600	2000
0	12.6	12.5	12.4	12.1	11.8	11.4	10.5	10.1	9.4	8.4	7.2
20	12.6	12.5	12.4	12.1	11.8	11.4	10.5	10.1	9.4	8.4	7.2
35	9.8	9.7	9.4	9.1	8.6	8.0	7.0	6.4	6.7	4.7	3.4
50	9.0	8.7	8.3	7.8	7.1	6.4	5.2	4.3	3.3	1.9	0.2
70	6.8	6.6	6.3	5.8	5.3	4.7	3.6	2.9	2.0	0.9	-0.5
90	7.2	7.0	6.8	6.4	5.9	5.4	4.4	3.8	3.0	2.1	0.9
110	7.1	7.1	7.0	6.8	6.4	6.1	5.3	4.9	4.4	3.7	2.8
130	9.6	9.5	9.3	9.0	8.5	8.0	7.1	6.6	5.6	5.1	4.0
180	1.6	1.5	1.3	1.0	0.5	0.0	-0.9	-1.4	-2.1	-2.9	-4.0

1/3 Octave Dist. Angle	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000	25000
0	6.0	4.2	1.1	*	*	*	*	*	*	*	*
20	6.0	4.2	1.1	*	*	*	*	*	*	*	*
35	2.1	0.2	-2.3	-7.6	*	*	*	*	*	*	*
50	-1.5	-3.8	-7.2	-24.4	*	*	*	*	*	*	*
70	-1.6	-3.0	-4.4	-5.3	-7.0	-10.4	*	*	*	*	*
90	-0.1	-1.2	-2.2	-2.3	-2.6	-3.3	-3.8	-4.5	-5.2	-5.5	-5.6
110	2.1	1.4	0.3	0.6	0.6	0.4	0.3	0.2	0.1	0.3	0.6
130	3.2	2.2	1.4	1.5	1.2	0.8	0.5	0.0	-0.4	-0.5	-0.6
180	-4.8	-5.8	-6.6	-6.5	-6.8	-7.2	-7.5	-8.0	-8.4	-8.5	-8.6

Table 1. Directivity adjustments that are applied reference runup noise levels to simulate takeoff roll noise levels.
(* - A value of 1E-35 is used to reduce the influence of the directivity adjustments in these directions.)

1/3 Octave Dist. Angle	200	250	315	400	500	630	800	1000	1250	1600	2000
0	12.6	12.5	12.4	12.1	11.8	11.4	10.5	10.1	9.4	8.4	7.2
20	12.6	12.5	12.4	12.1	11.8	11.4	10.5	10.1	9.4	8.4	7.2
35	9.8	9.7	9.4	9.1	8.6	8.0	7.0	6.4	6.7	4.7	3.4
50	9.0	8.7	8.3	7.8	7.1	6.4	5.2	4.3	3.3	1.9	0.2
70	6.8	6.6	6.3	5.8	5.3	4.7	3.6	2.9	2.0	0.9	-0.5
90	7.2	7.0	6.8	6.4	5.9	5.4	4.4	3.8	3.0	2.1	0.9
110	7.1	7.1	7.0	6.8	6.4	6.1	5.3	4.9	4.4	3.7	2.8
130	9.6	9.5	9.3	9.0	8.5	8.0	7.1	6.6	5.6	5.1	4.0
180	1.6	1.5	1.3	1.0	0.5	0.0	-0.9	-1.4	-2.1	-2.9	-4.0

1/3 Octave Dist. Angle	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000	25000
0	6.0	4.2	1.1	*	*	*	*	*	*	*	*
20	6.0	4.2	1.1	*	*	*	*	*	*	*	*
35	2.1	0.2	-2.3	-7.6	*	*	*	*	*	*	*
50	-1.5	-3.8	-7.2	-24.4	*	*	*	*	*	*	*
70	-1.6	-3.0	-4.4	-5.3	-7.0	-10.4	*	*	*	*	*
90	-0.1	-1.2	-2.2	-2.3	-2.6	-3.3	-3.8	-4.5	-5.2	-5.5	-5.6
110	2.1	1.4	0.3	0.6	0.6	0.4	0.3	0.2	0.1	0.3	0.6
130	3.2	2.2	1.4	1.5	1.2	0.8	0.5	0.0	-0.4	-0.5	-0.6
180	-4.8	-5.8	-6.6	-6.5	-6.8	-7.2	-7.5	-8.0	-8.4	-8.5	-8.6

Table 1. Directivity adjustments that are applied reference runup noise levels to simulate takeoff roll noise levels.
(* - A value of 1E-35 is used to reduce the influence of the directivity adjustments in these directions.)

```
SEL      061011         2    127.3    125.3    123.3    121.4    119.4    117.5F-15      1

COMMENT 061011W0 OMEGA10.6 28 Dec 90 F-15               200 KTS    59 F    70 PCT

COMMENT 061011W0 HIGH BYPASS FAN   N061031A1
COMMENT 061011W0 TAKEOFF POWER           90.00 % RPM

          115.6    113.8    111.9    109.9    107.9    105.7    103.5    101.2F-15      2

           98.7     96.0     93.2     90.2     86.9     83.3     79.5     75.4F-15      3

         061011         1    127.3    125.3    122.2    119.1    116.4    113.8F-15      4

          111.2    108.6    106.2    104.0    101.8     99.7     97.6     95.5F-15      5

           93.1     90.6     87.6     84.3     80.1     75.3     70.0     64.3F-15
```

LEGEND

1 Comments Identifying and Describing the Power Conditions
2 AIR-TO- GROUND SEL Values
3 GROUND-TO-GROUND SEL Values

Shaded text shows the 1/3 octave band distances that are used in the reference noise tables and are shown here for illustration purposes.

Figure 7. OMEGA 10.6 Reference Noise Data Set. Generated from the NOISEFILE 6.0 Database.

```
AL        06101        0   105.5   103.5    99.1    94.8    91.6    88.7          1
COMMENT 06101W0 OMEGA11.2 28 Dec 90  59 F  70 PCT  29.92 IN HG   74-004-010 01
COMMENT 06101W0 F-15A     AIRCRAFT         ENG F100-PW-100(1)        N06106A0
COMMENT 06101W0  INTERMED PWR (MIL)     90.00 % NC       930 C FTIT   7850 LBS/HR
           86.1     83.5    80.9    78.5    76.1    73.7    71.3    68.8          2
           66.1     63.4    60.3    56.8    52.4    47.3    41.7    35.4          3
          06101       20   107.9   105.8   101.8    98.0    94.9    92.0          4
           89.2     86.5    83.8    81.3    78.8    76.3    73.8    71.3          5
           68.6     65.7    62.5    58.8    54.3    49.0    43.2    36.8          6
          06101       40   103.7   101.6    98.2    95.0    92.0    88.9          7
           85.9     82.9    80.0    77.3    74.6    71.9    69.3    66.6          8
           63.7     60.6    57.2    53.3    48.5    43.2    37.4    31.5          9
          06101       80   107.8   105.6   102.6    99.7    96.7    93.6         10
           90.6     87.5    84.4    81.7    78.9    76.1    73.3    70.6         11
           67.5     64.3    60.6    56.4    51.2    45.6    39.7    33.9         12
          06101       90   106.5   104.3   101.2    98.3    95.3    92.2         13
           89.0     85.8    82.6    79.7    76.8    73.9    71.0    68.2         14
           65.1     61.9    58.2    54.1    49.2    44.0    38.7    33.7         15
          06101      120   116.2   114.1   109.2   104.7   101.5    98.4         16
           95.6     92.8    90.1    87.5    85.0    82.5    80.1    77.6         17
           75.0     72.3    69.4    66.1    62.0    57.4    52.4    47.0         18
          06101      130   124.9   122.7   119.0   115.6   112.5   109.4         19
          106.2    103.1    99.9    97.1    94.2    91.4    88.7    86.0         20
           83.1     80.0    76.6    72.8    68.2    63.3    58.2    53.0         21
          06101      140   125.5   123.4   119.5   115.8   112.7   109.6         22
          106.5    103.5   100.6    97.9    95.2    92.5    89.9    87.3         23
           84.4     81.4    78.1    74.4    70.0    65.1    60.0    55.0         24
          06101      150   122.9   120.8   116.3   112.1   109.0   105.9         25
          103.0    100.2    97.4    94.8    92.2    89.7    87.1    84.5         26
           81.8     78.9    75.9    72.6    68.6    64.3    59.9    55.6         27
          06101      180    92.6    90.5    85.6    81.1    77.9    74.8         28
           71.9     69.2    66.5    63.9    61.4    58.9    56.3    53.7         29
           50.9     48.2    45.4    42.3    38.8    34.9    31.1    27.3
```

Figure 8. OMEGA 11 Reference Noise Data Set. Generated from the NOISEFILE 6.0 Database. (Shaded numbers are angles in degrees measured about the aircraft centerline, 0 being forward of the aircraft.).

The reference data that are generated by the OMEGA 10.7 and 11.3 programs are then used by NMAP 6.1 to extrapolate to other distances and other angles of propagation relative to the ground plane.

2.7.2 Lateral Attenuation and Transition Factor

Lateral attenuation accounts for the effects of ground absorption and aircraft shielding on sound propagation for positions to the side of an aircraft flight track. In NMAP 6.1 this is accomplished by one of two lateral attenuation models. One is applicable to air-to-ground noise level data for civil aircraft[13] and the other is applicable as a transition factor which interpolates between air-to-ground and ground-to-ground noise metric data for military aircraft.[14] Both are shown in Figure 9.

The SAE model is evoked for all civilian aircraft contained in NOISEFILE 6.2. The SAE model has been compared to actual measured civilian and military aircraft noise. The results of these comparisons show that the model predicts lateral attenuation for civilian aircraft with a reasonable level of accuracy but does not perform quite as well for military aircraft, resulting in an over-prediction of the value for the majority of military aircraft. Hence the need for a different lateral attenuation model for military aircraft.

In NMAP 6.1, the military lateral attenuation model is implemented in the form of a transition factor which basically interpolates between the predicted air-to-ground and ground-to-ground propagation data to determine the effects of lateral attenuation on propagation. The models are implemented as follows:

$$\text{Noise exposure } (d, \beta)\,|_{MIL} = TF \cdot 10^{(GG(d)/10)} + (1-TF) \cdot 10^{(AG(d)/10)} \qquad (9)$$

$$\text{Noise exposure}(d, \beta)\,|_{CIV} = 10^{((AG(d)-\Lambda)/10)} \qquad (10)$$

where noise exposure (d, β) = the exposure at observer distance d, and elevation angle β,

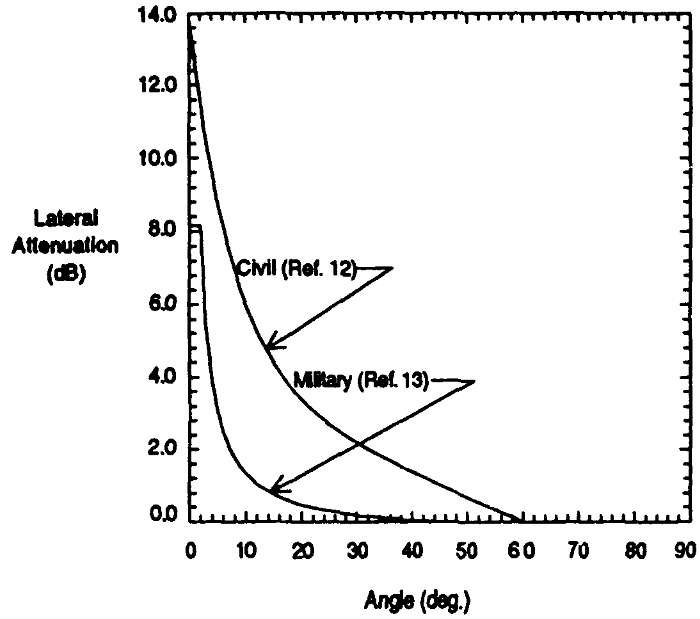
Λ = the SAE lateral attenuation values for civil aircraft,[12]

TF = the transition factor predicted by the NMAP 6.1 lateral attenuation model at angle β,

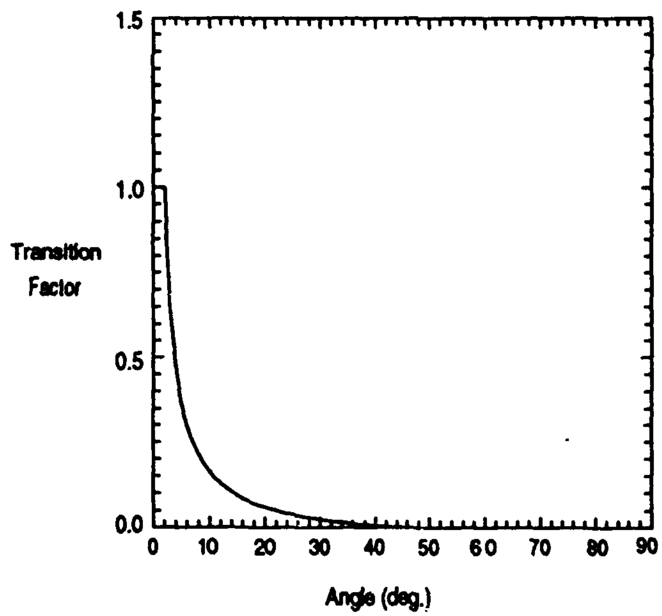
= 1 for $0 \le \beta < 2°$

= $(2.093/\beta) - 0.04651$ for $2° \le \beta < 45°$

= 0 for $45 \le \beta < 90°$



a. Lateral Attenuation Models.



b. NMAP 6.0 Transition Factor Model.

Figure 9. SAE and Military Lateral Attenuation Models, and the Transition Factor Model.

GG(d)	=	the reference OMEGA 10.7 ground-to-ground exposure value at distance d,
AG(d)	=	the reference OMEGA 10.7 air-to-ground exposure value at distance d.

It can be seen from the military aircraft model that at angles of elevation greater than 45 degrees, the transition factor tends to zero and the noise exposure is predicted solely by the air-to-ground model. Likewise, at low angles of elevation the transition factor term is predicted by 1.0 and the exposure tends to ground-to-ground model.

In the NMAP 6.1 program, the transition factor is returned as a ratio of the ground-to-ground propagation value at (d,β), and the air-to-ground propagation. Therefore for the first subflight in Section 3.1, the predicted transition factor is 1.0 and the resulting noise exposure is totally controlled by ground-to-ground propagation. The value returned is the ratio of the ground-to-ground reference noise exposure at (d,β) to the air-to-ground noise exposure under the same conditions. When NMAP 6.1 calculates the noise exposure for the segment, the transition factor will be multiplied by the air-to-ground reference noise exposure for that power segment and at the dominant slant distance for the segment. This transition factor ratio (TFR) is calculated as:

$$TFR = TF \cdot \left(\frac{10^{GG/10}}{10^{AG/10}} - 1\right) + 1 \qquad (11)$$

2.8 Duration

The effect of duration on an aircraft flyby is to increase the noise exposure of the observer over that of some instantaneous level. NMAP 6.1 uses two time integrated metrics that include the effects of duration. These metrics are SEL and EPNL. Reference noise exposure data are determined in terms of these metrics by the OMEGA 10.7 program. OMEGA 10.7 uses the spectral noise data and reference integrated metrics in the NOISEFILE 6.2 noise database, and expands these to other airspeeds and distances to give the required metric. OMEGA 10.7 uses the following equation to adjust for the difference in exposure due to differing propagation distances[15].

$$\text{Adjustment} = 6 \log (D_x/D_{ref}) \qquad (12)$$

where D_x = desired distance

D_{ref} = reference distance (usually 1000 ft)

OMEGA 10.7 uses the following equation to adjust for differing airspeeds.

$$\text{Adjustment} = -10 \log (V_x/V_{ref}) \quad (13)$$

where V_x = desired airspeed

V_{ref} = reference airspeed

Currently the time-integrated noise levels (SEL or EPNL) are included in the NOISEMAP input file (NMI file) and are the reference noise data that NMAP 6.1 uses in its noise calculations.

2.9 Noise Exposure Cut-Off

NMAP 6.1 uses a threshold noise exposure level in order to increase processing efficiency. If the calculated noise exposure level at any grid point is found to be below the threshold level, then the grid search in that direction ends. All the noise exposures up to that point are computed, and all the grid points up to, but not including, the grid point where the exposure fell below the threshold are updated.

The default exposure thresholds are as follows:

DNL	CNEL	NEF	WECPNL
35 dB	35 dB	0 dB	35 dB

2.10 Area Calculations

The calculation of the area bounded by the calculated noise exposure contours is approximated by dividing the grid mesh into four sections of 25 rows of grid points by 100 columns of grid points. The smaller sections are then further subdivided by taking the area bounded by four adjacent grid points and dividing them into five rows by three columns. The smaller 15 point meshes are then used to interpolate grid values to determine a contour edge. The rectangular areas bounded by the interpolated contour edge are then summed, and multiplied by the unit area of the rectangles to determine an approximate contour area.

The NMAP 6.1 area calculations compares reasonably well to calculations based on more accurate vector methods, but tends to have higher values due to the all-or-nothing addition of each subgrid section. An exact calculation of the contour area is made in the NMPLOT program and is displayed in its "show" window.

3.0 NOISEMAP FEATURES AND FLIGHT CHECKS

The following is a summary of the calculations that NMAP 6.1 performs in order to obtain noise exposure contours. These sample calculations concentrate on the development of the noise exposure levels, and do not place a heavy emphasis on such aspects as flight segmentation or any of the other "housekeeping" activities involved in contour development. In fact, the program was allowed to develop all of the support data in these calculations. These data were then taken and formatted in such a way as to illustrate the implementation of the algorithms detailed in Section 2. Figure 10a and b show the NOISEMAP Input (NMI) files that resulted in the specific point summary shown in Figure 11 and the contours shown in Figure 12.

Tables 2, 3 and 4 show the flight segmentation data, the flyover noise exposure summary and the runup noise exposure summary respectively for the specific point. The specific point is specified in the NMI file by the "SPECIF" keyword as detailed in Reference 8. As was said before, the coordinates entered into the NMI file have a positive offset of 50,000 ft in the x-direction and 150,000 ft in the y-direction in order to assure that the user enters coordinates as positive x and y values. It can be seen in Table 2 that the specific point coordinates X_{sp} and Y_{sp}, as used by NMAP, have had the offsets removed.

Figure 13 shows the geometry of each of the subflights. Each element of Figure 13 shows the attitudes at each subflight endpoint, the slant distances and other physical data used in the calculations. This figure (along with Figure 4) should be used as a guide to understanding the geometry of the flight activity which produces the calculated noise exposure.

Please note that in many situations during the sample calculation a switch is made from noise levels in decibels to the power equivalent relative power. NMAP does all of its calculation in terms of power and all of its reporting in terms of decibels. It is more convenient and easier to visualize noise levels in decibels and a license is taken in showing some data in decibels and using that same data in calculations as power. To convert between the power P, and the noise level L the following relationships can be used.

To convert relative power to noise level in decibels, use:

$$L = 10 \log_{10}(P)$$

To convert noise level in decibels to relative power, use:

$$P = 10^{(L/10)}$$

```
COMMENT ARCHIVED
COMMENT 0
COMMENT INPUT FILE
COMMENT NMAP1807.BPS
COMMENT CASE NAME
COMMENT F-15 Power runup and flight tests for NOISEMAP report - asp
AIRFLD50000.  150000. 0.       0.       1000.                             EAST
      F-15 Power runup and flight tests for NOISEMAP report - asp
COMMENT This is a test of straight out and straight in operations
COMMENT of the F-15 aircraft for the NOISEMAP 6.0 tech report
COMMENT
COMMENT NOISEMAP input created by MCM v. 1.0 on May 25 1991 at 23:27:04 from:
COMMENT F-15 Power runup and flight tests for NOISEMAP report
COMMENT Created by BASEOPS Version 3.01 on 12-28-1990 at 10:25:58
PROCES
DNL
SAELAT                                                                    ON
SPROCE
SPECIF87999.  202000.                                                     TEST
COMMENT ******************************
COMMENT **        FLYOVER   DATA        **
COMMENT ******************************
SEL     061011        2   127.3   125.3   123.3   121.4   119.4   117.5F-15     1
COMMENT 061011W0 OMEGA10.6 28 Dec 90 F-15               200 KTS   59 F   70 PCT
COMMENT 061011W0 HIGH BYPASS FAN  N061031A1
COMMENT 061011W0 TAKEOFF POWER          90.00 % RPM
         115.6   113.8   111.9   109.9   107.9   105.7   103.5   101.2F-15     2
          98.7    96.0    93.2    90.2    86.9    83.3    79.5    75.4F-15     3
        061011        1   127.3   125.3   122.2   119.1   116.4   113.8F-15     4
         111.2   108.6   106.2   104.0   101.8    99.7    97.6    95.5F-15     5
          93.1    90.6    87.6    84.3    80.1    75.3    70.0    64.3F-15
SEL     061021        2   117.1   115.3   113.4   111.6   109.7   107.9F-15     1
COMMENT 061021W0 OMEGA10.6 28 Dec 90 F-15               250 KTS   59 F   70 PCT
COMMENT 061021W0 HIGH BYPASS FAN  N061031A1 N061051A1 N061031A1
COMMENT 061021W0 TAKEOFF POWER          85.00 % RPM
         106.1   104.3   102.4   100.5    98.5    96.4    94.2    91.9F-15     2
          89.5    86.9    84.1    81.1    77.9    74.5    70.8    66.9F-15     3
        061021        1   117.1   115.3   112.1   109.1   106.4   103.8F-15     4
         101.3    98.9    96.5    94.3    92.2    90.1    88.0    85.9F-15     5
          83.5    81.0    78.1    74.8    70.6    65.9    60.9    55.6F-15
RUNWAY100000. 200000. 90000.  200000. 0.      0.      3.                   9C
COMMENT test departure with 45 degree turn
FLTTRK13000.  0.      2000.   45.     290000. 0.                          TKOF9D1
COMMENT F-15 45 degree turn departure
TOROLL                                                                    ON
TODSCR61.     1.      061001                  061001  061011. 8000.       061 DEP *
      061011. 20000.  061021. 305570.                                     061 DEP
ALTUDE  061001        0.      0.      8000.   0.      20000.  2000.       061 DEP *
      200000. 10000.                                                      061 DEP
AIRSPD  061001        0.      0.      8000.   200.    20000.  250.        061 DEP *
      200000. 250.                                                        061 DEP
FLIGHT061.    001.    50.     0.      5.                                  061 DEP
CLEAR                                                                     ALL
```

Figure 10a. Nmap 6.0 Sample Case Input File Part 1. (Header and Flyover Data.)

```
COMMENT ******************************
COMMENT **        RUNUP   DATA        **
COMMENT ******************************
AL       06101        0   105.5   103.5    99.1    94.8    91.6    88.7          1
COMMENT 06101W0 OMEGA11.2 28 Dec 90  59 F  70 PCT  29.92 IN HG   74-004-010 01
COMMENT 06101W0 F-15A     AIRCRAFT         ENG F100-PW-100(1)        N06106A0
COMMENT 06101W0  INTERMED PWR (MIL)    90.00 % NC       930 C FTIT   7850 LBS/HR
           86.1    83.5    80.9    78.5    76.1    73.7    71.3    68.8          2
           66.1    63.4    60.3    56.8    52.4    47.3    41.7    35.4          3
          06101      20   107.9   105.8   101.8    98.0    94.9    92.0          4
           89.2    86.5    83.8    81.3    78.8    76.3    73.8    71.3          5
           68.6    65.7    62.5    58.8    54.3    49.0    43.2    36.8          6
          06101      40   103.7   101.6    98.2    95.0    92.0    88.9          7
           85.9    82.9    80.0    77.3    74.6    71.9    69.3    66.6          8
           63.7    60.6    57.2    53.3    48.5    43.2    37.4    31.5          9
          06101      80   107.8   105.6   102.6    99.7    96.7    93.6         10
           90.6    87.5    84.4    81.7    78.9    76.1    73.3    70.6         11
           67.5    64.3    60.6    56.4    51.2    45.6    39.7    33.9         12
          06101      90   106.5   104.3   101.2    98.3    95.3    92.2         13
           89.0    85.8    82.6    79.7    76.8    73.9    71.0    68.2         14
           65.1    61.9    58.2    54.1    49.2    44.0    38.7    33.7         15
          06101     120   116.2   114.1   109.2   104.7   101.5    98.4         16
           95.6    92.8    90.1    87.5    85.0    82.5    80.1    77.6         17
           75.0    72.3    69.4    66.1    62.0    57.4    52.4    47.0         18
          06101     130   124.9   122.7   119.0   115.6   112.5   109.4         19
          106.2   103.1    99.9    97.1    94.2    91.4    88.7    86.0         20
           83.1    80.0    76.6    72.8    68.2    63.3    58.2    53.0         21
          06101     140   125.5   123.4   119.5   115.8   112.7   109.6         22
          106.5   103.5   100.6    97.9    95.2    92.5    89.9    87.3         23
           84.4    81.4    78.1    74.4    70.0    65.1    60.0    55.0         24
          06101     150   122.9   120.8   116.3   112.1   109.0   105.9         25
          103.0   100.2    97.4    94.8    92.2    89.7    87.1    84.5         26
           81.8    78.9    75.9    72.6    68.6    64.3    59.9    55.6         27
          06101     180    92.6    90.5    85.6    81.1    77.9    74.8         28
           71.9    69.2    66.5    63.9    61.4    58.9    56.3    53.7         29
           50.9    48.2    45.4    42.3    38.8    34.9    31.1    27.3
RNPPAD94000.  202000. 30.                                                PAD1
COMMENT F-15 on runup pad 1
RUDSCR61.     90.     06101                                              RUN1PAD1
RUNUP 61.     90.     10.     0.      1.      60.                        RUN1PAD1
CLEAR
CLEAR                                                                    ALL
AREA  85.     80.     75.     70.     65.
END
```

Figure 10b. NMAP 6.0 Sample Input File Part 2. (Runup Data.)

```
/* ARCHIVED */
0
/* INPUT FILE */
NMAP1807.BPS
/* CASE NAME */
F-15 Power runup and flight tests for NOISEMAP report

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DNL                  F-15 Power runup and flight tests for NOISEMAP report
     SUMMARY OF AIRCRAFT FLIGHT OPERATIONS AT SPECIFIC GROUND LOCATION TEST
      X =  87999.0 FT    Y = 202000.0     FT

         RANK            1
      AIRCRAFT          61
       MISSION           1
   FLIGHT TRK          9D1
        POWER 90.00 % RP
     AIRSPEED    200 KTS
     ALTITUDE     648 FT
   SLANT DIST    2105 FT
   ELEV ANGLE  17.95 DEG
   EVENTS DAY     50.000
        NIGHT      5.000
EFCTV SEL      107.09 DB
      DNL       77.72 DB
  CUM DNL       77.72 DB

                                                          FLIGHT DNL      77.72 DB
                                                           TOTAL DNL      77.74 DB
  12/28/90    -------------------- NOISEMAP 6.00 -------------------- PAGE    8

DNL                  F-15 Power runup and flight tests for NOISEMAP report
     SUMMARY OF AIRCRAFT  RUNUP OPERATIONS AT SPECIFIC GROUND LOCATION TEST
      X =  87999.0 FT    Y = 202000.0 FT

         RANK            1
      AIRCRAFT          61
        THRUST          90
    RUNUP PAD PAD1
        POWER 90.00 % NC
   SLANT DIST    6001 FT
        ANGLE  120.0 DEG
   TIME   DAY  600.0 SEC
        NIGHT   60.0 SEC
         AL        73.05 DB
      DNL       54.47 DB
  CUM DNL       54.47 DB

                                                          RUNUP DNL       54.47 DB
                                                          TOTAL DNL       77.74 DB
```

Figure 11. NMAP 6.0 Specific Point Calculation for a Sample Case. (Figure shows the major contributers both flyover and runup operations.)

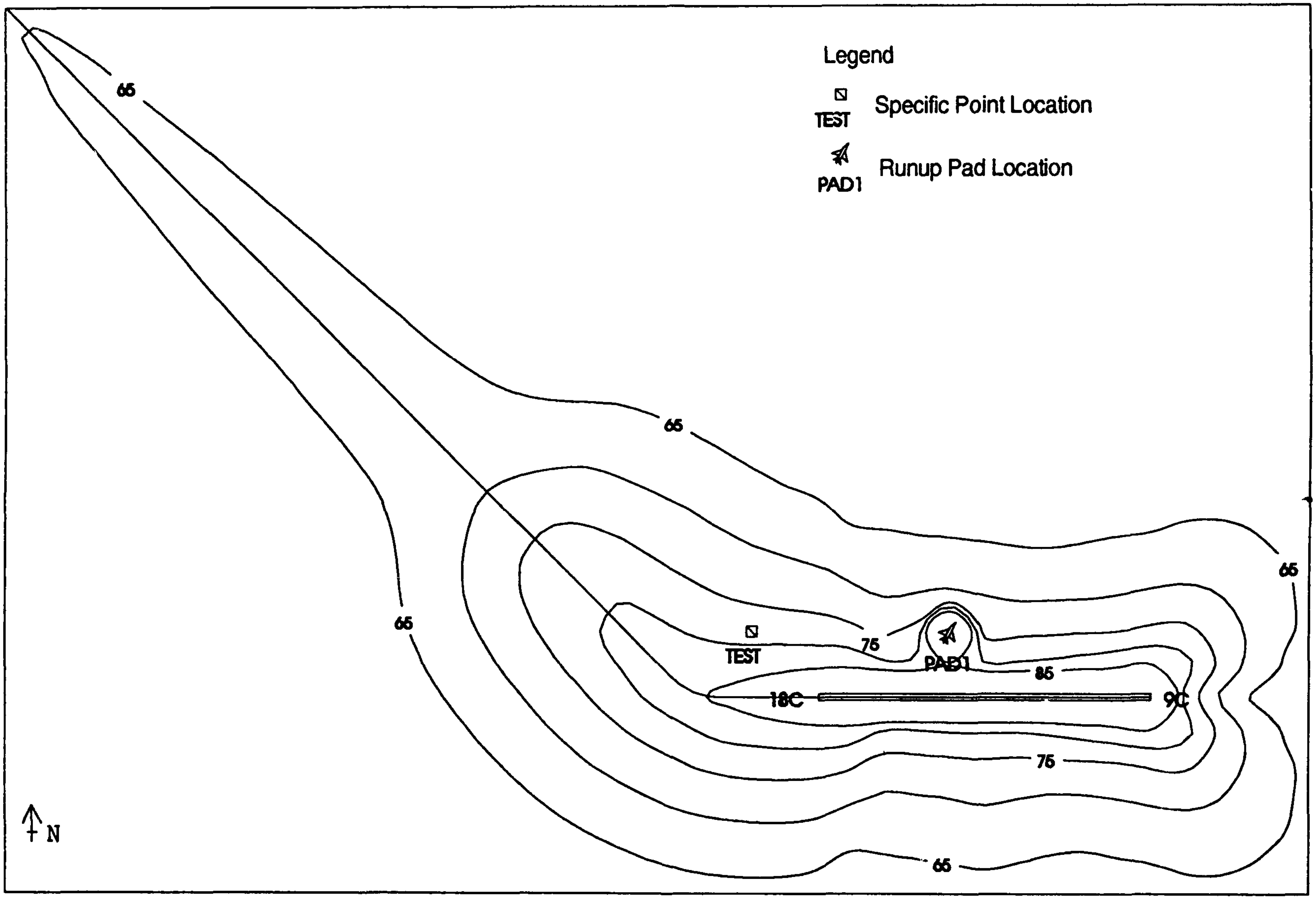

Figure 12. Plot from the NMPLOT 1.1 program of the sample case. (Plot has been modified for this report.)

Volume of ops - Flyover	100
Volume of ops - Runup	20
Runup time (sec)	60
Num of power segments	3
Number of subflights:	6

Subflight breakdown: (Internal grid coordinates = specified x-50000, specified y-150000)

Flight Segment 1 - takeoff roll, 90% RPM, 200 kts.
subflights: 1 Points: 1:2

subflight#	Ground coordinates (internal grid) startX	startY	stopX	stopY	GTrack	Altitude A	B	Heading Cos	Sin
[illegible]	50,000.0	50,000.0	42,000.0	50,000.0	straight	0.0	0.0	-1	-8.74E-08

Flight Segment 2 - takeoff climb, 90% RPM, 200 kts.
subflights: 3 Points: 2:3, 3:4, 4:5

subflight#	Ground coordinates (internal grid) startX	startY	stopX	stopY	GTrack	Altitude A	B	Heading Cos	Sin
2	42,000.0	50,000.0	37,000.0	50,000.0	straight	0.0	833.3	-1	-8.74E-08
3	37,000.0	50,000.0	35,585.8	50,585.8	turn	833.3	1,095.1	-0.707107	0.7071068
4	35,585.8	50,585.8	31,746.8	54,424.8	straight	1,095.1	2,000.0	-0.707107	0.7071068

Flight Segment 3 - continued climb, 85% RPM, 250 kts.
subflights: 2 Points: 5:6, 6:7

subflight#	Ground coordinates (internal grid) startX	startY	stopX	stopY	GTrack	Altitude A	B	Heading Cos	Sin
5	31,746.8	54,424.8	-95,632.5	181,704.0	straight	2,000.0	10,000.0	-0.707107	0.7071068
6	-95,632.5	181,704.0	-169,475.2	255,546.8	straight	10,000.0	10,000.0	-0.707107	0.7071068

Generalized Correction Factor

subflight	Fa	Fb
1:2	1.293828	1
2:3	1	0.9166667
3:4	0.9166667	0.886594
4:5	0.886594	0.763941
5:6	0.763941	0.5285548
6:7	0.5285548	0.5285548

Specific Point Location (internal grid coordinates)

SpX	SpY
37,999.0	52,000.0

DNL Exposure at Specific Point= 77.74 dB (sum of flyover and runup exposures)

Table 2. Segmentation of the Flight Parameters

Segment	1	2			3	
subflight	1:2	2:3	3:4	4:5	5:6	6:7
subfltLength	8000	5068.969	1570.79633	5504.094	180177.7	104570.8
Slant CPA	2000	2105.386	2385.885	2872.995	3209.727	10359.57
DominantSlantDist.	2000	-----------------	-----------------	2105.386	-----------------	3209.727
Altitude	0	648.8109	833.333	1095.133	2000	10000
ExposeIntgalCPA	1.23981E-08	1.44296E-07	3.69319E-08	3.19116E-08	4.07886E-09	2.24289E-12
TransitionFactorR	0.2455066	0.9471701	0.9580592	0.9650072	0.9940802	1
ExposeIntgalSeg	0.0495925	-----------------	-----------------	0.944770456	-----------------	0.04204493
Weighting	0.012175286	-----------------	-----------------	0.899164048	-----------------	0.041796169
RefExpPowAir-Grn	61407140000	55941890000	-----------------	-----------------	2560318000	-----------------
in dB	107.88	107.48	-----------------	-----------------	94.08	-----------------
TORollOffset	1.27076E-27	-----------------	-----------------	-----------------	-----------------	-----------------
TORollAngle (deg)	9.462	-----------------	-----------------	-----------------	-----------------	-----------------
SegExpPow	747649495.7	-----------------	-----------------	50300936252	-----------------	107011483.1
SegExpdB	88.74			107.02		80.29

Overall ExpPow 51155597231

Overall ExpdB 107.09

DNL 77.72 dB (see section 2.1.1 for formula)

Formulas		
	Weighting =	sum(ExposeIntegralCPA*TransitionFactor)*DominantSlantDist^2
	Seg. 1	(RefExpPow +TORollOffset)* Weighting
	Seg. 2 & 3	RefExpPow *Weighting

Table 3. Summary of Flyover Exposure Calculations at the Specific Point

RunupPad Coordinates

Xpad	Ypad
[illegible]	52000

SpecificPoint Coordinate

SpX	SpY
37999	52000

Runup Duration

[illegible]

Transform from Grid Coordinate System to Runup Pad

padSpX	padSpY
[illegible]	[illegible]

SlantDistance and RunupAngle in new reference

RpSlant	RpAngle	RpAngle
[illegible]	[illegible]	[illegible]

Real and Integer Number to Closest Ref. Table Element Number

D	D1
[illegible]	[illegible]

D = 10Log(RpSlant) - 22, 1 <= D <= 22

D1 = Integer(D) + 1

Reference Exposure Power Data

RefAngle	RefAngle	Slant Distance 5000	6300		Interpolating 6001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20170528
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Exposure at Specific Point Due to Runup Aircraft

Interpolate between Reference Angle and SlantDistance

Resuling Runup Exposure

	[illegible]	in Power
	[illegible]	dB
DNL	[illegible]	

Interpolation Formulas - Distance= RefUpr - (RefLwr - RefUpr)*(UprIndex - FractIndex)

- Angle= ((AngLwr Lvl- AngUprLvl)*(AngLwr-Angle)/(AngUpr-AngLwr) + AngLwrLvl) * RunupDuration

Table 4. Summary of the Runup Exposure Calculations at the Specific Point

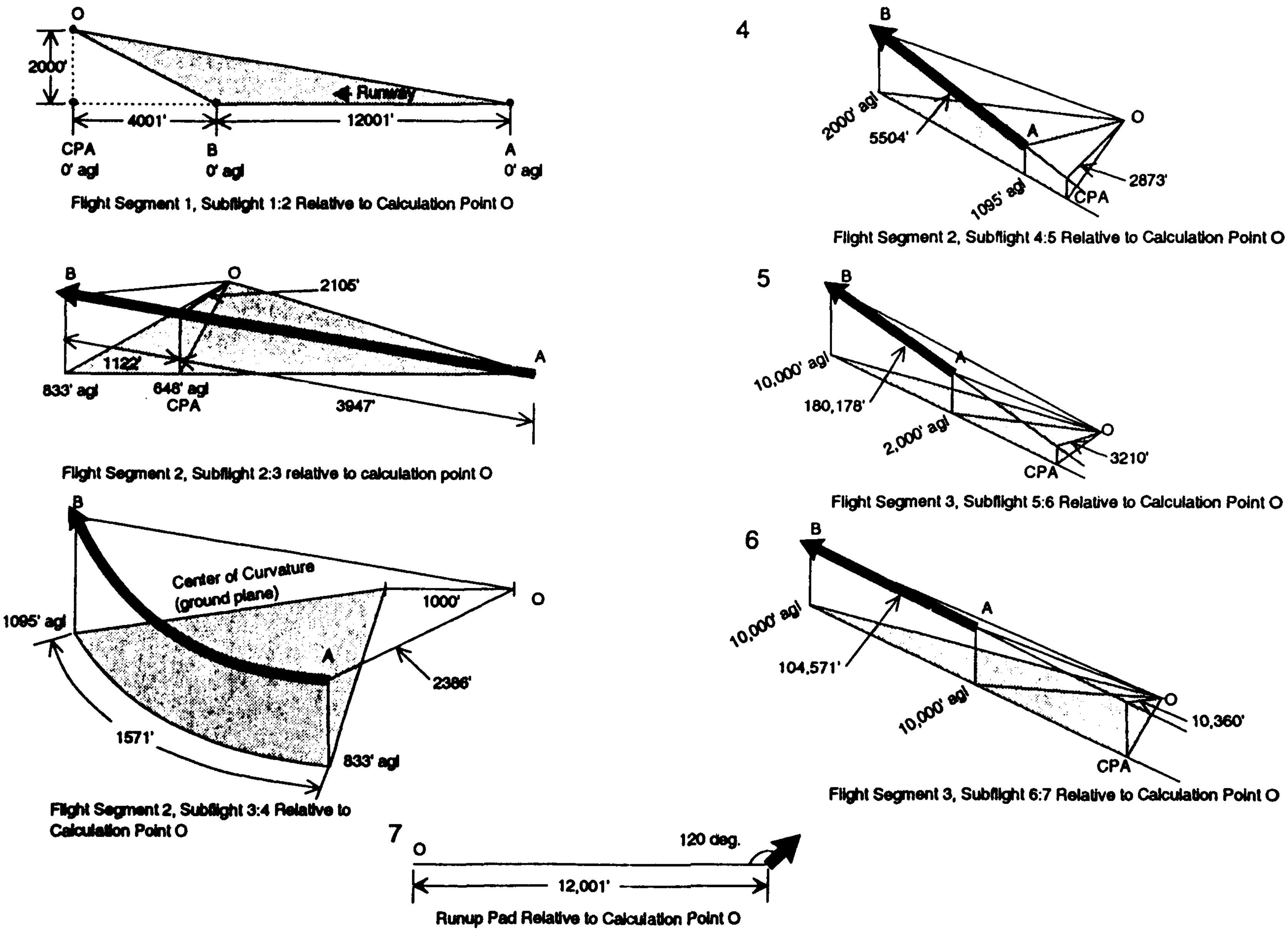

Figure 13. Sample Calculation Subflights 1-6 and Runup Pad.

3.1 Example Calculation in Detail

3.1.1 Flight Segment 1

AC = -12001'	COA = -80.54°
BC = -4001'	COB = -63.44°
SL = 4473'	Elevation Angle = 0
AB = AC - BC = -8000'	F_a = 1.293828
$ALT_{cpa} = 0$	F_b = 1.0

The takeoff roll (TOROLL) calculation is divided into two parts. The first part calculates the noise exposure arising from the flight segment itself, while the second part calculates an offset to account for the ground runup and acceleration effects of takeoff. For the flight segment, NOISEMAP will use the ground-to-ground propagation SEL power values (0° elevation angle), since the altitude at the closest point of approach (CPA) is 0 ft AGL. NOISEMAP obtains a computed reference SEL power value, E_{rc}, by

$$E_{rc} = 10^{\frac{AtG}{10}} \cdot TFR$$

where TFR is a transition factor ratio and the AtG is the Air-to-Ground propagation value at the slant distance to the CPA. This equation adjusts the reference SEL power value for lateral attenuation by interpolating between the reference Air-to-Ground and Ground-to-Ground propagation SEL power values which are contained in NOISEFILE.

NOISEFILE provides the Air-to-Ground (L_{AG}) and Ground-to-Ground (L_{GG}) propagation reference values to interpolate to the calculated slant distance in the following manner:

L_{AG} (2000') = 107.9 dB $\qquad$ L_{AG} (2500') = 105.7 dB

L_{GG} (2000') = 101.8 dB $\qquad$ L_{GG} (2500') = 99.7 dB

Using NOISEMAP's algorithm for interpolating the Transition Factor Ratio (TFR) and also noting that the value of the Transition Factor from the NOISEMAP lateral attenuation algorithm is 1.0, then TFR becomes:

$$TFR = \frac{L_{GG}\,(2500') - [L_{GG}\,(2000') - L_{GG}\,(2500')] \cdot D'}{L_{AG}\,(2500') - [L_{AG}\,(2000') - L_{AG}\,(2500')] \cdot D'}$$

where D' equals the fractional difference between the index of the upper limit of the interpolation (a number between 1 and 22 representing the one third octane increment) and the fractional index value of the distance being interpolated to. This is determined by:

$$
\begin{aligned}
D &= 10 \log(\text{distance}) - 22 \\
&= 10 \log(2000) - 22 \\
&= 33.01029 - 22 = 11.01029
\end{aligned}
$$

$$
\begin{aligned}
D' &= D - [\text{Integer}(D) + 1] \\
&= -0.9897
\end{aligned}
$$

In power terms the equation becomes:

$$TFR = \frac{9.332543E9 - (1.513561E10 - 9.332543E9) \bullet -0.9897}{3.715352E10 - (6.16595E10 - 3.715352E10) \bullet -0.9897}$$

NOISEMAP stores and calculates the noise values using the power value (not in decibels) and only converts to the dB value at the final grid printout. The TFR computed is:

$$TFR = 0.2455066$$

Next, NOISEMAP computes the Exposure Factor, C_y, for this segment. In this step NOISEMAP also adds any noise level offsets with the following equation in the LINEX subroutine:

$$C_y = \{ I_c \bullet \frac{\sin(COA) - \sin(COB)}{2} \} + \{ [\frac{(F_a - F_b) \cdot OC}{AC - BC}] \bullet \frac{\cos(COB) - \cos(COA)}{2} \}$$

where

$$I_c = \frac{AC \bullet FB - BC \bullet FA}{AC - BC}$$

AC and BC are the distances from the CPA and points A and B, respectively. When computing the sine and cosine functions, the angles COA and COB are defined as positive if the direction from the CPA to the point is the same as the aircraft heading and negative if opposite. F_a and F_b are correction factors that are applied at points A and B, respectively. Currently, an altitude correction, the delta six at the start of takeoff roll, airspeed adjustment and DSEL (a user input offset to the SEL) are used by NOISEMAP in the generalized correction factors (see Section 2.4.3). The Altitude correction is computed by the following equation:

$$\text{Altitude correction} = 10^{[(1000 - ALT) \bullet 10^{-5}]}$$

where ALT is in feet.

It is important to note that this correction is set equal to 1.0 for altitudes less than 1000 ft.

Since the takeoff roll algorithm, TOROLL, is invoked, the correction for the start of takeoff roll, (Δ_6), is computed by:

$$\Delta_6 = 5 \log \left(\frac{S_{ref}}{S_{rotate}} \right)$$

where

S_{ref} = 4779 ft (length of the Boeing 707 reference aircraft takeoff roll)

S_{rotate} = 8000 ft (the F-15 input takeoff roll)

$$\Delta_6 = 1.118765 \text{ dB} \rightarrow \text{Power}_{\Delta 6} = 10^{\frac{\Delta 6}{10}} = 1.293828$$

The takeoff roll correction at the point of rotation is 0, since the omega program computes a Noise Profile data set for the given liftoff speed.

The airspeed correction is based on the rotation speed. However, during takeoff roll, this correction is not applicable. There are now user-entered dB corrections.

C_y can therefore be calculated as in the following steps:

F_a (dB) = Altitude correction at pt A + start of TOROLL Δ_6 + Speed Adjustment at pt A + DSEL at pt A

F_a (P) = 1.293828

F_b (dB) = Altitude correction at pt B + end of TOROLL Δ_6 + Speed Adjustment at pt B + DSEL at pt B

F_b (P) = 1.000000

$$C_y = \left\{ \left[\frac{(-12001 \cdot 1 + 4001 \cdot 1.293828)}{(-12001 + 4001)} \right] \cdot \left[\frac{(\sin(-80.5^\circ) - \sin(-63.4^\circ))}{2} \right] \right\} + \left[\frac{(F_a - F_b) \cdot 2000}{-8000} \cdot \frac{(\cos(-63.4^\circ) - \cos(-80.5^\circ))}{2} \right]$$

C_y (P) = 0.049592

Therefore, the flight part of this segment noise exposure is:

$$E_{rc} \cdot |C_y| = L_{refAG} \cdot TFR \cdot |C_y| = 6.140714E10 \cdot 0.2455066 \cdot 0.049592 = 7.476419E8 \text{ (88.74 dB)}$$

(Note that the reference air-to-ground power level has been interpolated by NMAP using the methodology shown for the TFR calculation.)

In the second part of the TOROLL calculation, NOISEMAP computes an adjustment to the noise exposure. This adjustment is added to the noise exposure computed above to obtain the total noise exposure for the takeoff roll segment. The Takeoff Roll Ground Runup noise level is

computed by adding the total directivity pattern offset to the ground-to-ground noise level from the start of takeoff roll to the calculation point. For segment 1 the slant distance to start of takeoff roll is 12167 ft and the ground-to-ground noise level from interpolating the NOISEFILE data is 81.04 dB. The angle to the calculation point is 9.462° and interpolating in table 1 (page 25) we get 1×10^{-35} for the adjustment. This leaves us with a value of 1.27076×10^{-27} value for the TOROLL adjustment. This essentially adds no correction for the runup portion of the takeoff roll.

The total noise exposure for this segment is essentially equal to the flight segment exposure plus the TOROLL adjustment, that is:

$$\text{Flight Segment 1 Noise Exposure} = 10 \log\{(E_{ref} + E_{TOROLL}) \cdot (TFR \cdot |C_y|)\}$$
$$= 10 \log\{(6.140714E10 + 1.27076E\text{-}27) \cdot 0.012175286\} = 88.74 \text{ dB}$$

3.1.2 Flight Segment 2

Subflight 2:3

The second segment is divided further into three subflights. The first subflight 2:3 is the initial liftoff segment. The aircraft starts at 200 kts and 0 ft AGL and climbs to 833 ft AGL at a climb angle of 9.46°. The geometry of this subflight relative to the calculation point is given in Figure 13-2.

The following data are needed for the calculation:

AC = -3947'	COA	=	-61.90°
BC = 1122'	COB	=	28.16°
SL = 2105'	Elevation Angle	=	17.93°
The altitude at CPA = 648'	TF	=	0.0702217
The slant distance to CPA (OC) = 2105'	TFR	=	.94717
Flight Segment length (AB) = AC–BC = -5069'	F_a	=	1.0000
	F_b	=	0.9166667

$L_{AG}(2105) = 55{,}941{,}890{,}000 = 107.48$ dB
$L_{GG}(2105) = 13{,}855{,}120{,}000 = 101.45$ dB

The Exposure Factor, C_y, for the 2:3 subflight is evaluated as before:

$$C_y = -0.6395776$$

From this C_y a normalized value for this subflight is determined by:

$$C_{ycpa} = \frac{|C_y|}{SL^2} = \frac{0.639576}{(2105)^2} = 1.44341E\text{-}7$$

Subflight 3:4

The second subflight of segment 2 is a climbing turn with a 2000 ft ground plane radius. The aircraft is still climbing at the 9.46° climb angle starting at 833 ft AGL and ending at 1,095 ft AGL after completing the 45° right hand turn. The geometry of subflight 3:4 relative to the calculation point is shown in Figure 13-3.

The following data are needed for this calculation:

Subflight Length	=	1,593 ft		
Climb∠	=	9.462°		
AtG(2386)	=	69,882,142,782	=	108.4
GtG(2386)	=	17,411,793,902	=	102.4
Elevation∠	=	20.43		
TF	=	0.055937		
TFR	=	0.9580593		
F_a	=	0.9166667		
F_b	=	0.886594		

The Exposure Factor for subflight 3:4 is calculated by the following equation in the TURNEX subroutine:

$$C_y = R \cdot SL^2\left(\frac{Sec\beta}{dct}\right)\left\{F_a\left[\frac{2C_2\theta + C_1}{dcn} - \frac{C_1}{\sqrt{C_0}}\right] + \left[\frac{F_a - F_b}{\theta}\right]\left[\frac{C_1\theta + 2C_0}{dcn} - 2\sqrt{C0}\right]\right\}$$

where

SL = 2386'	Symm = -1
R = 2000'	dcn = 3004.62885
θ = -0.785398	dct = -2.97842E13
X_0 = 0	Secβ = 1.013794
Y_0 = 1000	
Z_a = 833.33'	
Z_b = 1095'	D_b-D_a = 1570.7963

tanβ = 0.166667

$$C_0 = X_0^2 + Y_0^2 + Z_a^2 + R^2 - 2RX_0 = 5{,}692{,}440$$

$$C_1 = -2RY_0 + 2R \left[\frac{Z_b - Z_a}{D_b - D_a}\right] Z_a \text{ (Symm)} = -4{,}551{,}560$$

$$C_2 = R^2 \left(\frac{Z_b - Z_a}{D_b - D_a}\right)^2 + 2R\,(0.47483 \cdot X_0 + \text{Symm }(.1269\ Y_0)) = -395{,}578$$

Thus, C_y is:

$$\begin{aligned} C_y &= 3.88186\text{E-}4\ [599.5194 \cdot F_a - 265.3916\ (F_a - F_b)] \\ &= 3.88186\text{E-}4\ [334.1278 \cdot F_a + 265.3916 \cdot F_b] \\ &= 0.2102330 \end{aligned}$$

Normalized exposure factor at CPA for subflight 3:4, $C_{ycpa} = 3.69319\text{E-}8$

Subflight 4:5

This subflight of the second flight segment is a straight climb that occurs after the 45° right hand turn. The aircraft starts at 1095 ft AGL and reaches 2000 ft AGL. This subflight geometry is shown in Figure 13-4.

The following data are needed for this portion of the calculation:

AC	=	876.8268	COA	=	16.91°
BC	=	6380.921	COB	=	65.76°
			Elevation Angle	=	22.41°
Alt at CPA	=	1095.133	TF	=	0.046886
Slant at CPA	=	2872.995	TFR	=	0.9650072
AB	=	–5504 ft	F_a	=	0.886594
			F_b	=	0.7639441
$L_{AG}(2873)$	=	104.6 dB			
$L_{GG}(2873)$	=	98.6 dB			

Using the methodology for subflights 1:2 and 2:3, the normalized exposure factor for this subflight is:

$$\begin{aligned} C_y &= -0.263393 \\ C_{ycpa} &= 3.191056\text{E-}8 \end{aligned}$$

NOISEMAP now adds the three subflights together to get the noise exposure value for the second segment by using the following summation:

Noise exposure segment 2 =

$$L_{AGref} \cdot \left(\sum_{i=1}^{n_{subf}} C_y kpa_i \cdot TFR_i \right) \cdot (SL_{DOM})^2$$

$$= 55{,}942{,}000{,}000 \cdot (1.44341E\text{-}7 \times 0.9471701 + 3.69319E\text{-}8 \times 0.9580593 + 3.191056E\text{-}8 \times 0.9650072) \cdot (2105.98332)^2$$

$$= 50{,}300{,}936{,}352$$

$$= 107.02 \text{ dB}$$

It should be noted that the L_{AGref} is the reference air-to-ground noise exposure of the dominant subflight. The dominant subflight is determined by the largest C_{ycpa} term, which in this case occurs at subflight 2:3. The L_{AGref} is then determined from the slant distance to the CPA of this subflight.

3.1.3 Flight Segment 3

This section describes the third flight segment which is the final climb of this flight profile.

Subflight 5:6

This segment includes a power cutback to 85 percent RPM and a speed increase to 250 kts for the F-15. The geometry of Subflight 5:6 relative to the calculation point is shown in Figure 13-5.

AC = 6218.352	AB = 180,177	
BC = 186396.0	Slant CPA = 3209.727	
F_a = 0.7639441	COA = 62.6815°	TF = 0.0078536
F_b = 0.5285548	COB = 88.6840°	TFR = 0.9940802
	ALT at CPA = 2000'	Elev ∠ = $\sin^{-1}\left(\frac{ALT_{cpa}}{OA}\right) = 38.5°$

$$L_{AG}(3210) = 2.560317E9$$
$$L_{GG}(3210) = 6.153103E8$$

From previous methods, the noise Exposure Factor for subflight 5:6 is

$$C_y = 0.042032765$$
$$C_{ycpa} = 4.07992E\text{-}9$$

Subflight 6:7

This last subflight of this segment has the aircraft leveling off at 10,000 ft AGL. The geometry in Figure 13-6 relates this subflight track to the calculation point.

The following values are needed in this calculation:

AC = 186135.6	Slant CPA = 10,359.57	
BC = 290706.4	COA = 86.814°	TF = 0
F_a = 0.5285548	COB = 87.959°	TFR = 1.0
F_b = 0.5285348	ALT at CPA = 10,000 ft	Elevation ∠ = 74.9°

The noise Exposure Factor for this subflight is:

$$C_y = 0.00024128$$
$$C_{ycpa} = 2.24822E\text{-}12$$

NOISEMAP now adds these two subflights together to get the noise exposure value for the third flight segment.

$$\text{Noise Exposure for Segment 3} = L_{AGref} \cdot \left(\sum_{i=1}^{n_{subf}} C_y kcpa_i \cdot TFR_i \right) \cdot (SL_{DOM})^2$$

$$= 2560318000 \cdot (4.07886E\text{-}9 \cdot 0.9940802 + 2.24289E\text{-}12 \cdot 1.0) \cdot (3209.727)^2$$
$$= 107011483$$
$$= 80.29 \text{ dB}$$

3.1.4 Overall Flight Exposure

NOISEMAP computes the total noise exposure from the flight profile by summing the calculated exposure power values of each segment:

Segment 1== 10 log(7.476419 E8)	=	88.74 dB
Segment 2== 10 log(50300936352)	=	107.02 dB
Segment 3== 10 log(107011483)	=	80.29 dB
Total== 10 log(51155597231)	=	107.09 dB

The total flyover noise exposure can now be computed by:

$$\text{Flight Noise Exposure} = SEL + 10 \log (N_{day} + 10\, N_{night}) - 49.4$$
$$= 5.115597E10 \cdot 100 / 86{,}400 = 5.920829E7 = 77.72 \text{ dB}$$

3.1.5 Runup Contribution

Figure 13-7 shows the geometry for the runup calculation.

NOISEMAP interpolates from the input runup data set to get the A-weighted sound level at the observer point. At a 120° propagation angle, a runup value can be interpolated from the reference power values in the following manner (see Table 4):

A-Level at 1,000'	=	75.0 dB	=	31,622,779
A-Level at 12,500'	=	72.3 dB	=	16,982,437
A-Level at 12,000'	=	73.1 dB	=	20,170,528
			Value =	19,904,649

The runup noise exposure is computed by:

$$
\begin{aligned}
\text{Runup Noise Exposure} &= AL + 10\log(Dur_{day} + 10Dur_{night}) - 49.4 \\
&= (19{,}904{,}649 \cdot (600+10(60))/86{,}400 \\
&= 276{,}453 \\
\text{in DNL} &= 54.42 \text{ dB}
\end{aligned}
$$

3.1.6 Final Specific Point DNL Calculation

The final Noise Exposure for the calculation point is computed by adding the DNL contribution of the flyover and the ground runup operations.

Flyover Noise Exposure	=	59,208,290	or DNL =	77.72 dB
Runup Noise Exposure	=	280146	or DNL =	54.47 dB
Total Noise Exposure	=	59,414,743	or DNL =	77.74 dB

3.2 Flight Checks

The following are a list of flight procedures which NMAP 6.1 checks to insure that the flight conditions are valid. Most of these checks are redundant if the NMI file is created by the MCM.

(1) Aircraft airborne at end of runway.

(2) Aircraft is airborne before starting a turn.

(3) Aircraft not descending below airfield elevation on a touch-and-go.

(4) Aircraft landing glide slope is $0.5 < \text{slope} \leq 10.0$ degrees.

(5) Aircraft altitude ascends above 301.0 feet in takeoffs and touch-and-go's.

(6) The aircraft subflight end distance is greater than the beginning distance (i.e., aircraft not reversing on a subflight segment).

(7) Aircraft continues to ascend after a touch-and-go and not fall below 301.0 feet altitude within 100 feet from brake release point.

Reference 4 has a complete listing of the error messages from the NMAP 6.1 and MCM programs.

3.3 Aircraft Noise Reference Database

The following tables contain the complete list of aircraft in the NOISEFILE 6.2 database. Table 5 shows all of the flyover aircraft reference noise data, Table 6 shows the runup data and Table 7 shows the civilian aircraft data.

SUMMARY OF FLYOVER DATA IN NOISEFILE 6.1 07 MAY 91 PAGE 1

COMDECK NAME	ACC	OPC	POWER SETTING FIRST	VALUE&UNITS SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N003031AI	003	03	1.83 EPR		TAKEOFF POWER	E-3A	1000 FT	250 KTS	GEAR DOWN, 50DEG FLAPS	27 DEC 79
N003051AI	003	05	1.45 EPR		APPROACH POWER	E-3A	1000 FT	250 KTS	GEAR DOWN, 50DEG FLAPS	27 DEC 79
N003061AP	003	06	1.50 EPR		INTERMEDIATE POWER	E-3A	1000 FT	250 KTS	GEAR DOWN, SPEED BRAKE	27 DEC 79
N003131AI	003	13	1.12 EPR		TRAFFIC PATTERN	E-3A	1000 FT	250 KTS	NO DRAG	27 DEC 79
N005031AI	005	03	110.0 % N1	866 C EGT	TAKEOFF POWER	KC-10A	1000 FT	230 KTS	TAKEOFF POWER	19 MAR 87
N005051AI	005	05	79.0 % N1	604 C EGT	APPROACH POWER	KC-10A	1000 FT	165 KTS	APPROACH	19 MAR 87
N005061AI	005	06	90.2 % N1	695 C EGT	INTERMEDIATE POWER	KC-10A	1000 FT	210 KTS	INTERMEDIATE	19 MAR 87
N005131AI	005	13	60.0 % N1	478 C EGT	TRAFFIC PATTERN	KC-10A	1000 FT	200 KTS	TRAFFIC PATTERN	19 MAR 87
N005141AP	005	14	100.0 % N1	780 C EGT	INTERMED POWER (MIL)	KC-10A	1000 FT	230 KTS	INTERMED (MIL)	19 MAR 87
N006031AI	006	03	970 C TIT	16800 IN-LBS	TAKEOFF POWER	C-130E	1000 FT	170 KTS	EST. FROM ACT. TAKEOFF	27 DEC 79
N006051AI	006	05	580 C TIT	4000 IN-LBS	APPROACH POWER	C-130E	1000 FT	140 KTS	EST. FROM ACT. LANDING	27 DEC 79
N007011BN	007	01	101.5 % NC	10030 LBS/HR	AFTERBURNER POWER	F-18	1000 FT	250 KTS	NO DRAG	08 FEB 80
N007031BI	007	03	101 % NC	9000 LBS/HR	TAKEOFF POWER	F-18	1000 FT	250 KTS	NO DRAG	08 FEB 80
N007051BI	007	05	86 % NC	4250 LBS/HR	APPROACH POWER	F-18	1000 FT	250 KTS	FULL DRAG	08 FEB 80
N007131BI	007	13	68 % NC	2097 LBS/HR	TRAFFIC PATTERN	F-18	1000 FT	250 KTS	NO DRAG	08 FEB 80
N014031AI	014	03	3772 NF		TAKEOFF POWER	YC-14	1000 FT	120 KTS	FLAPS 20, GEAR UP	28 FEB 83
N014041AP	014	04	2468 NF		CRUISE POWER	YC-14	1000 FT	250 KTS	NO DRAG	28 FEB 83
N014051AI	014	05	2068 NF		APPROACH POWER	YC-14	1000 FT	85 KTS	FLAPS 45, GEAR DOWN	28 FEB 83
N014131AI	014	13	2605 NF		TRAFFIC PATTERN	YC-14	1000 FT	150 KTS	FLAPS 30, GEAR DOWN	28 FEB 83
N014151AP	014	15	3640 NF		STOL TAKEOFF	YC-14	1000 FT	110 KTS	FLAPS 30, GEAR UP	28 FEB 83
N014161AP	014	16	2118 NF		STOL APPROACH	YC-14	1000 FT	80 KTS	FLAPS 60, GEAR DOWN	28 FEB 83
N015031AI	015	03	2.25 EPR	99 % NF	TAKEOFF POWER	YC-15	1000 FT	120 KTS	CTOL TAKEOFF	28 FEB 83
N015051AI	015	05	1.56 EPR	89 % NF	APPROACH POWER	YC-15	1000 FT	85 KTS	CTOL APPROACH	28 FEB 83
N015061AP	015	06	1.4 EPR	86 % NF	INTERMEDIATE POWER	YC-15	1000 FT	150 KTS	INTERMEDIATE - CLEAN	28 FEB 83
N015131AI	015	13	1.45 EPR	77 % NF	TRAFFIC PATTERN	YC-15	1000 FT	150 KTS	TRAFFIC PATTERN DOWNWIND	28 FEB 83
N015151AP	015	15	2.23 EPR	98.5 % NF	STOL TAKEOFF	YC-15	1000 FT	110 KTS	STOL TAKEOFF	28 FEB 83
N015161AP	015	16	1.55 EPR	88.5 % NF	STOL APPROACH	YC-15	1000 FT	80 KTS	42 DEG FLAPS, GEAR DOWN	28 FEB 83
N022031AI	022	03	4.9 EPR	93 % NF	TAKEOFF POWER	C-5A	1000 FT	185 KTS	GEAR DOWN, 40% FLAPS	08 JAN 90
N022041AI	022	04	2.48 EPR	68 % NF	CRUISE POWER	C-5A	1000 FT	250 KTS	NO DRAG	08 JAN 90
N022051AI	022	05	2.99 EPR	68 % NF	APPROACH POWER	C-5A	1000 FT	150 KTS	GEAR DOWN, 100% FLAPS	08 JAN 90
N022061AI	022	06	3.38 EPR	75 % NF	INTERMEDIATE POWER	C-5A	1000 FT	130 KTS	GEAR DOWN, 100% FLAPS	08 JAN 90
N022131AP	022	13	3.07 EPR	71 % NF	TRAFFIC PATTERN	C-5A	1000 FT	165 KTS	GEAR DOWN, 40% FLAPS	08 JAN 90
N022141AI	022	14	4.0 EPR	80 % NF	INTERMED POWER (MIL)	C-5A	1000 FT	185 KTS	GEAR DOWN, 40% FLAPS	08 JAN 90
N024031AI	024	03	99 % RPM		TAKEOFF POWER	T-37B	1000 FT	170 KTS	FLAPS DN, GEAR DN	27 DEC 79
N024041AP	024	04	90 % RPM		CRUISE POWER	T-37B	1000 FT	225 KTS	NO DRAG	27 DEC 79
N024051AI	024	05	80 % RPM		APPROACH POWER	T-37B	1000 FT	105 KTS	FLAPS DN, GEAR DN	27 DEC 79
N025031AI	025	03	100 % RPM	1.8 EPR	TAKEOFF POWER	C-135B	1000 FT	250 KTS	20 DEGREES FLAPS	27 DEC 79
N025041AI	025	04	76 % RPM	1.09 EPR	CRUISE POWER	C-135B	1000 FT	300 KTS	NO DRAG	27 DEC 79
N025051AI	025	05	90 % RPM	1.29 EPR	APPROACH POWER	C-135B	1000 FT	160 KTS	50 DEGREES FLAPS, GEAR DN	27 DEC 79
N026021AN	026	02	96 % RPM	2.85 EPR	TAKEOFF POWER WET	C-135A	1000 FT	200 KTS	FLAPS 20, GEAR UP	27 DEC 79
N026031AI	026	03	96 % RPM	2.45 EPR	TAKEOFF POWER	C-135A	1000 FT	199 KTS	FLAPS 50, GEAR DN	27 DEC 79
N026041AI	026	04	86 % RPM	1.50 EPR	CRUISE POWER	C-135A	1000 FT	300 KTS	NO DRAG	27 DEC 79
N026051AI	026	05	90 % RPM	1.75 EPR	APPROACH POWER	C-135A	1000 FT	160 KTS	FLAPS 40, GEAR UP	27 DEC 79

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database

COMDECK NAME	ACC	OPC	POWER SETTING FIRST	VALUE&UNITS SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N027031BI	027	03	96 % RPM	1.90 EPR	TAKEOFF POWER	C-141A	1000 FT	250 KTS	NO DRAG	27 DEC 79
N027041BI	027	04	85 % RPM	1.52 EPR	CRUISE POWER	C-141A	1000 FT	300 KTS	NO DRAG	27 DEC 79
N027051BI	027	05	68 % RPM	1.20 EPR	APPROACH POWER	C-141A	1000 FT	140 KTS	FLAPS DN, GEAR UP	27 DEC 79
N027061BP	027	06	68 % RPM	1.20 EPR	INTERMEDIATE POWER	C-141A	1000 FT	140 KTS	NO DRAG	27 DEC 79
N027121BP	027	12	91 % RPM	1.72 EPR	NORMAL RATED THRUST	C-141A	1000 FT	250 KTS	NO DRAG	27 DEC 79
N028031AI	028	03	60 IN HG	2800 RPM	TAKEOFF POWER	C-131B	1000 FT	140 KTS	FLAPS UP, GEAR DOWN	19 DEC 79
N028041AI	028	04	32 IN HG	2000 RPM	CRUISE POWER	C-131B	1000 FT	180 KTS	NO DRAG	19 DEC 79
N028051AI	028	05	27 IN HG	2400 RPM	APPROACH POWER	C-131B	1000 FT	120 KTS	FLAPS 17DEG, GEAR UP	19 DEC 79
N029031AI	029	03	100 % RPM		TAKEOFF POWER	T-33A	1000 FT	200 KTS	SPEED BRAKE ON	19 DEC 79
N029041AI	029	04	90 % RPM		CRUISE POWER	T-33A	1000 FT	300 KTS	NO DRAG	19 DEC 79
N029051AI	029	05	80 % RPM		APPROACH POWER	T-33A	1000 FT	125 KTS	NO DRAG	19 DEC 79
N030011AN	030	01	95 % RPM	2.05 EPR	AFTERBURNER POWER	F-100D	1000 FT	300 KTS	NO DRAG	27 DEC 79
N030031AI	030	03	94.5 % RPM	2.0 EPR	TAKEOFF POWER	F-100D	1000 FT	299 KTS	NO DRAG	27 DEC 79
N030041AP	030	04	92.3 % RPM	1.75 EPR	CRUISE POWER	F-100D	1000 FT	370 KTS	NO DRAG	27 DEC 79
N030051AI	030	05	89 % RPM	1.38 EPR	APPROACH POWER	F-100D	1000 FT	200 KTS	EST. F-101 -3.2DB	27 DEC 79
N031011AN	031	01	100 % RPM		AFTERBURNER POWER	F-4C	1000 FT	300 KTS	SPEED BRAKE OUT	30 MAR 88
N031031AI	031	03	100 % RPM		TAKEOFF POWER	F-4C	1000 FT	299 KTS	SPEED BRAKE OUT	30 MAR 88
N031051AI	031	05	87 % RPM		APPROACH POWER	F-4C	1000 FT	190 KTS	FLAPS DOWN, GEAR DOWN	30 MAR 88
N031131AP	031	13	86.5 % RPM		TRAFFIC PATTERN	F-4C	1000 FT	200 KTS	TRAFFIC PATTERN	30 MAR 88
N032031AI	032	03	100 % RPM	1.94 EPR	TAKEOFF POWER	T-39A	1000 FT	180 KTS	NO DRAG	27 DEC 79
N032041AI	032	04	89 % RPM	1.66 EPR	CRUISE POWER	T-39A	1000 FT	250 KTS	NO DRAG	27 DEC 79
N032051AI	032	05	79.5 % RPM	1.37 EPR	APPROACH POWER	T-39A	1000 FT	115 KTS	APP. DRAG CONFIGURATION	27 DEC 79
N033011AN	033	01	100 % RPM		AFTERBURNER POWER	T-38A	1000 FT	300 KTS	SPEED BRAKE ON	27 DEC 79
N033031AI	033	03	100 % RPM		TAKEOFF POWER	T-38A	1000 FT	299 KTS	SPEED BRAKE ON	27 DEC 79
N033041AI	033	04	90 % RPM		CRUISE POWER	T-38A	1000 FT	301 KTS	NO DRAG	27 DEC 79
N033051AI	033	05	91 % RPM		APPROACH POWER	T-38A	1000 FT	170 KTS	FLAPS 60%, GEAR DN	27 DEC 79
N037051AI	037	05	5225 NF	638 C TIT	APPROACH POWER	A-10A	1000 FT	150 KTS	GEAR AND FLAPS DOWN	28 FEB 83
N037111AI	037	11	6700 NF	826 C TIT	MAX RATED THRUST	A-10A	1000 FT	350 KTS	NO DRAG	28 FEB 83
N037121AI	037	12	6200 NF	756 C TIT	NORMAL RATED THRUST	A-10A	1000 FT	300 KTS	NO DRAG	28 FEB 83
N037131AI	037	13	5325 NF	646 C TIT	TRAFFIC PATTERN	A-10A	1000 FT	160 KTS	NO DRAG	28 FEB 83
N038011BN	038	01	90 % RPM	900 C TIT	AFTERBURNER POWER	F-16	1000 FT	350 KTS	NO DRAG	24 JUN 87
N038031BI	038	03	90 % RPM	900 C TIT	TAKEOFF POWER	F-16	1000 FT	350 KTS	NO DRAG	24 JUN 87
N038051BI	038	05	82 % RPM	650 C TIT	APPROACH POWER	F-16	1000 FT	130 KTS	GEAR AND FLAPS DOWN	24 JUN 87
N038061BI	038	06	85 % RPM	750 C TIT	INTERMEDIATE POWER	F-16	1000 FT	300 KTS	NO DRAG	24 JUN 87
N038131BI	038	13	75 % RPM	530 C TIT	TRAFFIC PATTERN	F-16	1000 FT	200 KTS	NO DRAG	24 JUN 87
N038141BI	038	14	92.0 % RPM	960 C TIT	INTERMED POWER (MIL)	F-16	1000 FT	350 KTS	MIL	24 JUN 87
N039011BN	039	01	97.5 % RPM	874 C EGT	AFTERBURNER POWER	B-1	1000 FT	275 KTS	GEAR AND FLAPS UP	18 AUG 88
N039041BP	039	04	89.9 % RPM	611 C EGT	CRUISE POWER	B-1	1000 FT	360 KTS	GEAR AND FLAPS UP	18 AUG 88
N039051BI	039	05	90 % RPM	600 C EGT	APPROACH POWER	B-1	1000 FT	165 KTS	APPROACH	10 FEB 89
N039141BI	039	14	98.5 % RPM	877 C EGT	INTERMED POWER (MIL)	B-1	1000 FT	270 KTS	GEAR AND FLAPS UP	18 AUG 88

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N043021AN	043	02	94 % RPM	2.77 EPR	TAKEOFF-WET	B-52G	1000 FT	170 KTS	EST. FROM B-52G T/O	10 NOV 87
N043031AI	043	03	94 % RPM	2.37 EPR	TAKEOFF POWER	B-52G	1000 FT	170 KTS	NO DRAG	10 NOV 87
N043041AI	043	04	83.5 % RPM	1.48 EPR	CRUISE POWER	B-52G	1000 FT	250 KTS	NO DRAG	10 NOV 87
N043051AI	043	05	86 % RPM	1.57 EPR	APPROACH POWER	B-52G	1000 FT	140 KTS	FLAPS AND GEAR DOWN	10 NOV 87
N044031AI	044	03	8200 LBS/HR	1.65 EPR	TAKEOFF POWER	B-52H	1000 FT	170 KTS	NO DRAG	27 DEC 79
N044041AI	044	04	2110 LBS/HR	1.10 EPR	CRUISE POWER	B-52H	1000 FT	250 KTS	NO DRAG	27 DEC 79
N044051AI	044	05	3965 LBS/HR	1.25 EPR	APPROACH POWER	B-52H	1000 FT	150 KTS	APP. DRAG CONFIGURATION	27 DEC 79
N045011AN	045	01	100 % RPM		AFTERBURNER POWER	F-104G	1000 FT	240 KTS	NO DRAG	27 DEC 79
N045031AI	045	03	100 % RPM		TAKEOFF POWER	F-104G	1000 FT	239 KTS	NO DRAG	27 DEC 79
N045041AI	045	04	92 % RPM		CRUISE POWER	F-104G	1000 FT	300 KTS	NO DRAG	27 DEC 79
N045051AI	045	05	95 % RPM		APPROACH POWER	F-104G	1000 FT	190 KTS	GEAR DOWN	27 DEC 79
N045061AP	045	06	92 % RPM		INTERMEDIATE POWER	F-104G	1000 FT	300 KTS	GEAR DOWN	27 DEC 79
N046011AN	046	01	101 % RPM		AFTERBURNER POWER	F-5E	1000 FT	350 KTS	NO DRAG	27 DEC 79
N046031AI	046	03	101 % RPM		TAKEOFF POWER	F-5E	1000 FT	300 KTS	NO DRAG	27 DEC 79
N046041AP	046	04	86 % RPM		CRUISE POWER	F-5E	1000 FT	325 KTS	NO DRAG	27 DEC 79
N046051AI	046	05	82 % RPM		APPROACH POWER	F-5E	1000 FT	170 KTS	LANDING CONFIGURATION	27 DEC 79
N061011AN	061	01	91 % RPM		AFTERBURNER POWER	F-15A	1000 FT	350 KTS	NO DRAG	28 FEB 83
N061031AI	061	03	90 % RPM		TAKEOFF POWER	F-15A	1000 FT	300 KTS	NO DRAG	28 FEB 83
N061041AP	061	04	73.5 % RPM		CRUISE POWER	F-15A	1000 FT	280 KTS	NO DRAG	28 FEB 83
N061051AI	061	05	75 % RPM		APPROACH POWER	F-15A	1000 FT	170 KTS	LANDING CONFIGURATION	28 FEB 83
N070031AI	070	03	100 % RPM		TAKEOFF POWER	B-57E	1000 FT	200 KTS	GEAR DOWN	27 DEC 79
N070051AI	070	05	82 % RPM		APPROACH POWER	B-57E	1000 FT	150 KTS	GEAR DOWN	27 DEC 79
N070061AI	070	06	92 % RPM		INTERMEDIATE POWER	B-57E	1000 FT	280 KTS	NO DRAG	27 DEC 79
N071011AN	071	01	96.5 % RPM		AFTERBURNER POWER	F-101B	1000 FT	350 KTS	SPEED BRAKE ON	27 DEC 79
N071031AI	071	03	96.0 % RPM		TAKEOFF POWER	F-101B	1000 FT	350 KTS	SPEED BRAKE ON	27 DEC 79
N071051AI	071	05	89 % RPM		APPROACH POWER	F-101B	1000 FT	200 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N071061AP	071	06	88 % RPM		INTERMEDIATE POWER	F-101B	1000 FT	300 KTS	NO DRAG	27 DEC 79
N072031AI	072	03	50 IN HG	2700 RPM	TAKEOFF POWER	C-7A	1000 FT	160 KTS	GEAR DOWN	27 DEC 79
N072051AI	072	05	27 IN HG	2250 RPM	APPROACH POWER	C-7A	1000 FT	90 KTS	GEAR DOWN	27 DEC 79
N072061AI	072	06	35 IN HG	2550 RPM	INTERMEDIATE POWER	C-7A	1000 FT	140 KTS	NO DRAG	27 DEC 79
N073031AI	073	03	1.97 EPR		TAKEOFF POWER	C-9A	1000 FT	250 KTS	GEAR DOWN	27 DEC 79
N073051AI	073	05	1.35 EPR		APPROACH POWER	C-9A	1000 FT	160 KTS	GEAR DOWN	27 DEC 79
N073061AI	073	06	1.70 EPR		INTERMEDIATE POWER	C-9A	1000 FT	300 KTS	NO DRAG	27 DEC 79
N074031AI	074	03	39 IN HG	2900 RPM	TAKEOFF POWER	C-119L	1000 FT	135 KTS	NO DRAG	27 DEC 79
N074051AI	074	05	33.6 IN HG	2600 RPM	APPROACH POWER	C-119L	1000 FT	120 KTS	FLAPS DOWN	27 DEC 79
N074061AP	074	06	33.5 IN HG	2000 RPM	INTERMEDIATE POWER	C-119L	1000 FT	150 KTS	NO DRAG	27 DEC 79
N075031AI	075	03	58 IN HG	2900 RPM	TAKEOFF POWER	C-121	1000 FT	165 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N075041AP	075	04	33 IN HG	2350 RPM	CRUISE POWER	C-121	1000 FT	150 KTS	NO DRAG	27 DEC 79
N075051AI	075	05	35 IN HG	2600 RPM	APPROACH POWER	C-121	1000 FT	140 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N075061AP	075	06	40 IN HG	2350 RPM	INTERMEDIATE POWER	C-121	1000 FT	150 KTS	GEAR AND FLAPS DOWN	27 DEC 79

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N076031AI	076	03	45 IN HG		TAKEOFF POWER	U-4B	1000 FT	170 KTS	10% FLAPS, GEAR DOWN	27 DEC 79
N076051AI	076	05	24 IN HG		APPROACH POWER	U-4B	1000 FT	100 KTS	40% FLAPS, GEAR DOWN	27 DEC 79
N076061AP	076	06	30 IN HG		INTERMEDIATE POWER	U-4B	1000 FT	180 KTS	NO DRAG	27 DEC 79
N077011AN	077	01	102.5 % RPM		AFTERBURNER POWER	F-105D	1000 FT	350 KTS	NO DRAG	27 DEC 79
N077031AI	077	03	102 % RPM		TAKEOFF POWER	F-105D	1000 FT	300 KTS	NO DRAG	27 DEC 79
N077051AI	077	05	96.5 % RPM		APPROACH POWER	F-105D	1000 FT	210 KTS	APP. DRAG CONFIGURATION	27 DEC 79
N077061AI	077	06	93 % RPM		INTERMEDIATE POWER	F-105D	1000 FT	290 KTS	NO DRAG	27 DEC 79
N078011AN	078	01	108 % RPM	2.45 EPR	AFTERBURNER POWER	F-106	1000 FT	350 KTS	SPEED BRAKE ON	27 DEC 79
N078031AI	078	03	106 % RPM	2.3 EPR	TAKEOFF POWER	F-106	1000 FT	350 KTS	GEAR DOWN	27 DEC 79
N078051AI	078	05	93 % RPM	1.7 EPR	APPROACH POWER	F-106	1000 FT	200 KTS	GEAR DOWN	27 DEC 79
N078061AI	078	06	86.5 % RPM	1.4 EPR	INTERMEDIATE POWER	F-106	1000 FT	300 KTS	NO DRAG	27 DEC 79
N079011AN	079	01	97 % RPM		AFTERBURNER POWER	F-111F	1000 FT	350 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N079031AI	079	03	97 % RPM		TAKEOFF POWER	F-111F	1000 FT	300 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N079051AI	079	05	81 % RPM		APPROACH POWER	F-111F	1000 FT	150 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N079061AI	079	06	86 % RPM		INTERMEDIATE POWER	F-111F	1000 FT	350 KTS	NO DRAG	27 DEC 79
N080011AN	080	01	100 % RPM		AFTERBURNER POWER	FB-111A	1000 FT	250 KTS	GEAR AND FLAPS DOWN	28 FEB 83
N080031AI	080	03	100 % RPM		TAKEOFF POWER	FB-111A	1000 FT	240 KTS	GEAR AND FLAPS DOWN	28 FEB 83
N080051AI	080	05	92 % RPM		APPROACH POWER	FB-111A	1000 FT	160 KTS	APPROACH	10 FEB 89
N081031AI	081	03	59 IN HG	2700 RPM	TAKEOFF POWER	KC-97L	1000 FT	190 KTS	FLAPS 55, GEAR UP	27 DEC 79
N081051AI	081	05	35 IN HG	2350 RPM	APPROACH POWER	KC-97L	1000 FT	125 KTS	FLAPS 33, GEAR DOWN	27 DEC 79
N081081AP	081	08	59 IN HG	2700 RPM	TAKEOFF WITH JETS	KC-97L	1000 FT	230 KTS	FLAPS 55, GEAR UP	27 DEC 79
N081091AP	081	09	35 IN HG	2350 RPM	APPROACH WITH JETS	KC-97L	1000 FT	130 KTS	FLAPS 33, GEAR DOWN	27 DEC 79
N082031AI	082	03	100 % RPM		TAKEOFF POWER	OV-10A	1000 FT	150 KTS	GEAR DOWN	27 DEC 79
N082051AI	082	05	97 % RPM		APPROACH POWER	OV-10A	1000 FT	100 KTS	FLAPS 20, GEAR DOWN	27 DEC 79
N082061AP	082	06	97 % RPM		INTERMEDIATE POWER	OV-10A	1000 FT	140 KTS	NO DRAG	27 DEC 79
N083031AI	083	03	1.97 EPR		TAKEOFF POWER	T-43A	1000 FT	200 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N083051AI	083	05	1.46 EPR		APPROACH POWER	T-43A	1000 FT	140 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N083061AI	083	06	1.21 EPR		INTERMEDIATE POWER	T-43A	1000 FT	250 KTS	NO DRAG	27 DEC 79
N084031AI	084	03	1.84 EPR	107.7 % RPM	TAKEOFF POWER	C-18A	1000 FT	300 KTS	TAKEOFF	28 DEC 88
N084041AI	084	04	1.12 EPR	75.0 % RPM	CRUISE POWER	C-18A	1000 FT	250 KTS	CRUISE	28 DEC 88
N084051AI	084	05	1.26 EPR	82.3 % RPM	APPROACH POWER	C-18A	1000 FT	140 KTS	APPROACH(NO INLET SUPPRS)	28 DEC 88
N085031AI	085	03	96.0 % RPM	817 C EGT	TAKEOFF POWER	C-21A	1000 FT	300 KTS	TAKEOFF POWER	13 JUL 88
N085051AI	085	05	70.4 % RPM	617 C EGT	APPROACH POWER	C-21A	1000 FT	140 KTS	APPROACH	13 JUL 88
N085061AI	085	06	80.0 % RPM	679 C EGT	INTERMEDIATE POWER	C-21A	1000 FT	225 KTS	INTERMEDIATE	13 JUL 88
N085181AI	085	18	60.0 % RPM	546 C EGT	FLT IDLE-250 KNOTS	C-21A	1000 FT	250 KTS	FLT IDLE-250 KNOTS	13 JUL 88
N086051AI	086	05	66.5 % N1	567 C EGT	APPROACH POWER	KC-135R	1000 FT	150 KTS	APPROACH	14 JUL 88
N086061AI	086	06	80.3 % N1	670 C EGT	INTERMEDIATE POWER	KC-135R	1000 FT	240 KTS	INTERMEDIATE	14 JUL 88
N086111AI	086	11	89.6 % N1	767 C EGT	MAX RATED THRUST	KC-135R	1000 FT	300 KTS	MAX THRUST	14 JUL 88
N086131AP	086	13	70.5 % N1	580 C EGT	TRAFFIC PATTERN	KC-135R	1000 FT	225 KTS	TRAFFIC PATTERN	14 JUL 88

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

COMDECK NAME	ACC	OPC	POWER SETTING FIRST	VALUE&UNITS SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N130031AI	130	03	100 % RPM	2.4 EPR	TAKEOFF POWER	A-4C	1000 FT	250 KTS		27 DEC 79
N130041AI	130	04	83 % RPM	1.5 EPR	CRUISE POWER	A-4C	1000 FT	300 KTS	NO DRAG	27 DEC 79
N130051AI	130	05	93 % RPM	1.8 EPR	APPROACH POWER	A-4C	1000 FT	150 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N131011AN	131	01	100 % RPM		AFTERBURNER POWER	A-5C	1000 FT	250 KTS		27 DEC 79
N131031AI	131	03	100 % RPM		TAKEOFF POWER	A-5C	1000 FT	249 KTS	NO DRAG	27 DEC 79
N131051AI	131	05	83 % RPM		APPROACH POWER	A-5C	1000 FT	160 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N132031AI	132	03	100 % RPM	2.05 EPR	TAKEOFF POWER	A-6A	1000 FT	250 KTS		27 DEC 79
N132051AI	132	05	95 % RPM	1.8 EPR	APPROACH POWER	A-6A	1000 FT	160 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N133031AI	133	03	96 % RPM		TAKEOFF POWER	A-7E	1000 FT	300 KTS		27 DEC 79
N133041AP	133	04	85 % RPM		CRUISE POWER	A-7E	1000 FT	301 KTS	NO DRAG	27 DEC 79
N133051AI	133	05	82 % RPM		APPROACH POWER	A-7E	1000 FT	160 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N134031AI	134	03	103.5 % RPM		TAKEOFF POWER	AV-8A	1000 FT	300 KTS		27 DEC 79
N134041AI	134	04	75 % RPM		CRUISE POWER	AV-8A	1000 FT	350 KTS	NO DRAG	27 DEC 79
N134051AI	134	05	70 % RPM		APPROACH POWER	AV-8A	1000 FT	150 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N136011AN	136	01	100 % RPM		AFTERBURNER POWER	F-14A	1000 FT	300 KTS		27 DEC 79
N136031AI	136	03	100 % RPM		TAKEOFF POWER	F-14A	1000 FT	299 KTS		27 DEC 79
N136041AI	136	04	82.5 % RPM		CRUISE POWER	F-14A	1000 FT	350 KTS	NO DRAG	27 DEC 79
N136051AI	136	05	85 % RPM		APPROACH POWER	F-14A	1000 FT	150 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N137031AI	137	03	3875 ESHP		TAKEOFF POWER	P-3A	1000 FT	140 KTS		27 DEC 79
N137041AI	137	04	2000 ESHP		CRUISE POWER	P-3A	1000 FT	180 KTS	NO DRAG	27 DEC 79
N137051AI	137	05	900 ESHP		APPROACH POWER	P-3A	1000 FT	120 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N138031AI	138	03	3.03 EPR	97.2 % RPM	TAKEOFF POWER	S-3A	1000 FT	250 KTS		27 DEC 79
N138041AI	138	04	1.77 EPR	60 % RPM	CRUISE POWER	S-3A	1000 FT	251 KTS		27 DEC 79
N138051AI	138	05	2.0 EPR	69 % RPM	APPROACH POWER	S-3A	1000 FT	140 KTS		27 DEC 79
N139031AI	139	03	101.7 % RPM		TAKEOFF POWER	T-2C	1000 FT	180 KTS		27 DEC 79
N139041AP	139	04	75.0 % RPM		CRUISE POWER	T-2C	1000 FT	250 KTS	NO DRAG	27 DEC 79
N139051AI	139	05	72.5 % RPM		APPROACH POWER	T-2C	1000 FT	140 KTS	GEAR AND FLAPS DOWN	27 DEC 79
N140031AI	140	03	95 % RPM		TAKEOFF POWER	AV-8B	1000 FT	300 KTS		28 FEB 83
N140051AI	140	05	84 % RPM		APPROACH POWER	AV-8B	1000 FT	150 KTS		28 FEB 83
N140131AI	140	13	70 % RPM		TRAFFIC PATTERN	AV-8B	1000 FT	230 KTS		28 FEB 83
N140171AI	140	17	40 % RPM		FLIGHT IDLE	AV-8B	1000 FT	350 KTS		10 NOV 83
N504031BI	504	03	100 % RPM		TAKEOFF POWER	A-37	1000 FT	300 KTS	EST. T-38 +0.0DB	27 DEC 79
N504041BI	504	04	90 % RPM		CRUISE POWER	A-37	1000 FT	300 KTS	EST. T-38 +0.0DB	27 DEC 79
N504051BI	504	05	91 % RPM		APPROACH POWER	A-37	1000 FT	170 KTS	EST. T-38 +0.0DB	27 DEC 79
N507031AI	507	03	60 IN HG	2800 RPM	TAKEOFF POWER	C-118	1000 FT	140 KTS	EST. C-131 +3.0DB	27 DEC 79
N507041AI	507	04	32 IN HG	2000 RPM	CRUISE POWER	C-118	1000 FT	180 KTS	EST. C-131 +3.0DB	27 DEC 79
N507051AI	507	05	27 IN HG	2400 RPM	APPROACH POWER	C-118	1000 FT	120 KTS	EST. C-131 +3.0DB	27 DEC 79

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

SUMMARY OF FLYOVER DATA IN NOISEFILE 6.1 07 MAY 91

COMDECK NAME	ACC	OPC	POWER SETTING FIRST	VALUE&UNITS SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG	CONFIGURATION	DATE OF OMEGA 6 RUN
N508031AI	508	03	100 % RPM	1.94 EPR	TAKEOFF POWER	C-140	1000 FT	180 KTS	EST.	T-39 +3.0DB	27 DEC 79
N508041AI	508	04	89 % RPM	1.66 EPR	CRUISE POWER	C-140	1000 FT	250 KTS	EST.	T-39 +3.0DB	27 DEC 79
N508051AI	508	05	79.5 % RPM	1.37 EPR	APPROACH POWER	C-140	1000 FT	115 KTS	EST.	T-39 +3.0DB	27 DEC 79
N509011AN	509	01	101 % RPM		AFTERBURNER POWER	F-5A&B	1000 FT	350 KTS	EST.	F-5E -.9DB	27 DEC 79
N509031AI	509	03	101 % RPM		TAKEOFF POWER	F-5A&B	1000 FT	300 KTS	EST.	F-5E -.9DB	27 DEC 79
N509041AP	509	04	86 % RPM		CRUISE POWER	F-5A&B	1000 FT	325 KTS	EST.	F-5E -.9DB	27 DEC 79
N509051AI	509	05	82 % RPM		APPROACH POWER	F-5A&B	1000 FT	170 KTS	EST.	F-5E -.9DB	27 DEC 79
N510011AN	510	01	97 % RPM		AFTERBURNER POWER	F-111A&E	1000 FT	350 KTS	EST.	F-111F -1.3DB	27 DEC 79
N510031AI	510	03	97 % RPM		TAKEOFF POWER	F-111A&E	1000 FT	300 KTS	EST.	F-111F -1.3DB	27 DEC 79
N510051AI	510	05	81 % RPM		APPROACH POWER	F-111A&E	1000 FT	150 KTS	EST.	F-111F -1.3DB	27 DEC 79
N510061AI	510	06	86 % RPM		INTERMEDIATE POWER	F-111A&E	1000 FT	350 KTS	EST.	F-111F -1.3DB	27 DEC 79
N511011AN	511	01	97 % RPM		AFTERBURNER POWER	F-111D	1000 FT	350 KTS	EST.	F-111F -.8DB	27 DEC 79
N511031AI	511	03	97 % RPM		TAKEOFF POWER	F-111D	1000 FT	300 KTS	EST.	F-111F -.8DB	27 DEC 79
N511051AI	511	05	81 % RPM		APPROACH POWER	F-111D	1000 FT	150 KTS	EST.	F-111F -.8DB	27 DEC 79
N511061AI	511	06	86 % RPM		INTERMEDIATE POWER	F-111D	1000 FT	350 KTS	EST.	F-111F -.8DB	27 DEC 79
N512011AN	512	01	95 % RPM	2.05 EPR	AFTERBURNER POWER	F-102	1000 FT	300 KTS	EST.	F-100 +0.0DB	27 DEC 79
N512031AI	512	03	94.5 % RPM	2.0 EPR	TAKEOFF POWER	F-102	1000 FT	300 KTS	EST.	F-100 +0.0DB	27 DEC 79
N512041AP	512	04	92.3 % RPM	1.75 EPR	CRUISE POWER	F-102	1000 FT	370 KTS	EST.	F-100 +0.0DB	27 DEC 79
N512051AI	512	05	89 % RPM	1.38 EPR	APPROACH POWER	F-102	1000 FT	200 KTS	EST.	F-100 +0.0DB	27 DEC 79
N513031AI	513	03	96 % RPM		TAKEOFF POWER	A-3	1000 FT	350 KTS	EST.	F-101 +0.0DB	27 DEC 79
N513051AI	513	05	89 % RPM		APPROACH POWER	A-3	1000 FT	200 KTS	EST.	F-101 +0.0DB	27 DEC 79
N513061AP	513	06	88 % RPM		INTERMEDIATE POWER	A-3	1000 FT	300 KTS	EST.	F-101 +0.0DB	27 DEC 79
N516031AI	516	03	60 IN HG	2800 RPM	TAKEOFF POWER	T-29	1000 FT	140 KTS	EST.	C-131 +0.0DB	27 DEC 79
N516041AI	516	04	32 IN HG	2000 RPM	CRUISE POWER	T-29	1000 FT	180 KTS	EST.	C-131 +0.0DB	27 DEC 79
N516051AI	516	05	27 IN HG	2400 RPM	APPROACH POWER	T-29	1000 FT	120 KTS	EST.	C-131 +0.0DB	27 DEC 79
N517011AN	517	01	100 % RPM		AFTERBURNER POWER	SR-71	1000 FT	200 KTS			27 DEC 79
N517031AI	517	03	70 % RPM		TAKEOFF POWER	SR-71	1000 FT	200 KTS			27 DEC 79
N517051AI	517	05	30 % RPM		APPROACH POWER	SR-71	1000 FT	200 KTS			27 DEC 79
N518031AI	518	03	102 % RPM		TAKEOFF POWER	U-2	1000 FT	300 KTS	EST.	F-105 + 0.2 DB	27 DEC 79
N518051AI	518	05	96.5 % RPM		APPROACH POWER	U-2	1000 FT	210 KTS	EST.	F-105 + 0.2 DB	27 DEC 79
N518061AI	518	06	93 % RPM		INTERMEDIATE POWER	U-2	1000 FT	290 KTS	EST.	F-105 + 0.2 DB	27 DEC 79
N519021AN	519	02	94 % RPM	2.77 EPR	TAKEOFF POWER-WET	B-52B&D&E	1000 FT	170 KTS	B-52G	-0.6DB	27 DEC 79
N519031AI	519	03	94 % RPM	2.37 EPR	TAKEOFF POWER	B-52B&D&E	1000 FT	170 KTS	B-52G	-0.6DB	27 DEC 79
N519041AI	519	04	83.5 % RPM	1.48 EPR	CRUISE POWER	B-52B&D&E	1000 FT	250 KTS	B-52G	-0.6DB	27 DEC 79
N519051AI	519	05	86 % RPM	1.57 EPR	APPROACH POWER	B-52B&D&E	1000 FT	140 KTS	B-52G	-0.6DB	27 DEC 79
N520031AI	520	03	970 C TIT	16800 IN-LBS	TAKEOFF POWER	C-130A&D	1000 FT	170 KTS	EST.	C-130E -0.4DB	27 DEC 79
N520051AI	520	05	580 C TIT	4000 IN-LBS	APPROACH POWER	C-130A&D	1000 FT	140 KTS	EST.	C-130E -0.4DB	27 DEC 79
N521031AI	521	03	970 C TIT	16800 IN-LBS	TAKEOFF POWER	C-130H&N&P	1000 FT	170 KTS	EST.	C-130E +0.9 DB	27 DEC 79
N521051AI	521	05	580 C TIT	4000 IN-LBS	APPROACH POWER	C-130H&N&P	1000 FT	140 KTS	EST.	C-130E +0.9 DB	27 DEC 79

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N523031AI	523	03	2800 RPM	60 IN HG	TAKEOFF	C-123K	1000 FT	140 KTS	EST. C-131 +0DB	27 DEC 79
N523051AI	523	05	2400 RPM	27 IN HG	APPROACH	C-123K	1000 FT	120 KTS	EST. C-131 +0DB	27 DEC 79
N523081AP	523	08	2800 RPM	100 % RPM	TAKEOFF WITH JETS	C-123K	1000 FT	200 KTS	EST. C-131 +T-38	27 DEC 79
N523091AP	523	09	2400 RPM	91 % RPM	APPROACH WITH JETS	C-123K	1000 FT	150 KTS	EST. C-131 +T-38	27 DEC 79
N527011AN	527	01	95 % RPM		AFTERBURNER	F-8	1000 FT	300 KTS	EST. F-100D +0.5DB	27 DEC 79
N527031AI	527	03	94.5 % RPM		TAKEOFF	F-8	1000 FT	300 KTS	EST. F-100D +0.5DB	27 DEC 79
N527041AP	527	04	92.3 % RPM		CRUISE	F-8	1000 FT	370 KTS	EST. F-100D +0.5DB	27 DEC 79
N527051AI	527	05	89 % RPM		APPROACH	F-8	1000 FT	200 KTS	EST. F-100D +0.5DB	27 DEC 79
N535031AI	535	03	100 % RPM		TAKEOFF	C-12	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 89
N535051AI	535	05	30 % RPM		LANDING	C-12	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 39
N536031AI	536	03	30000 LBS		TAKEOFF	C-17	1000 FT	160 KTS	ESTIM 757-200 +3 DB	14 FEB 89
N536041AI	536	04	10000 LBS		CRUISE	C-17	1000 FT	160 KTS	ESTIM 757-200 +3 DB	14 FEB 89
N536051AI	536	05	5000 LBS		APPROACH	C-17	1000 FT	160 KTS	ESTIM 757-200 +3 DB	14 FEB 89
N540031AI	540	03	15000 LBS		TAKEOFF	C-137	1000 FT	160 KTS	INM10 B-707 + 0.00dB	26 NOV 89
N540051AI	540	05	4000 LBS		LANDING	C-137	1000 FT	160 KTS	INM10 B-707 + 0.00dB	26 NOV 89
N541031AI	541	03	14000 LBS		TAKEOFF	C-20	1000 FT	160 KTS	INM37 BAC-111 + 0.00dB	26 NOV 89
N541041AI	541	04	6000 LBS		CRUISE	C-20	1000 FT	160 KTS	INM37 BAC-111 + 0.00dB	26 NOV 89
N541051AI	541	05	3000 LBS		LANDING	C-20	1000 FT	160 KTS	INM37 BAC-111 + 0.00dB	26 NOV 89
N542031AI	542	03	14000 LBS		TAKEOFF	C-22	1000 FT	160 KTS	INM24 B-727 + 0.00dB	26 NOV 89
N542041AI	542	04	6000 LBS		CRUISE	C-22	1000 FT	160 KTS	INM24 B-727 + 0.00dB	26 NOV 89
N542051AI	542	05	3000 LBS		LANDING	C-22	1000 FT	160 KTS	INM24 B-727 + 0.00dB	26 NOV 89
N547031AI	547	03	100 % RPM		TAKEOFF	C-23	1000 FT	160 KTS	INM73 CESSNA + 0.00dB	26 NOV 89
N547051AI	547	05	30 % RPM		LANDING	C-23	1000 FT	160 KTS	INM73 CESSNA + 0.00dB	26 NOV 89
N548031AI	548	03	40000 LBS		TAKEOFF	E-4	1000 FT	160 KTS	INM02 B-747 + 0.00dB	26 NOV 89
N548041AI	548	04	16000 LBS		CRUISE	E-4	1000 FT	160 KTS	INM02 B-747 + 0.00dB	26 NOV 89
N548051AI	548	05	8000 LBS		LANDING	E-4	1000 FT	160 KTS	INM02 B-747 + 0.00dB	26 NOV 89
N548061AI	548	06	32000 LBS		INTERMEDIATE	E-4	1000 FT	160 KTS	INM02 B-747 + 0.00dB	26 NOV 89
N549031AI	549	03	100 % RPM		TAKEOFF	T-34	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N549051AI	549	05	30 % RPM		LANDING	T-34	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N550031AI	550	03	100 % RPM		TAKEOFF	T-41	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N550051AI	550	05	30 % RPM		LANDING	T-41	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N551031AI	551	03	100 % RPM		TAKEOFF	T-42	1000 FT	160 KTS	INM76 BEECH BARON + 0.0dB	26 NOV 89
N551051AI	551	05	30 % RPM		LANDING	T-42	1000 FT	160 KTS	INM76 BEECH BARON + 0.0dB	26 NOV 89
N552031AI	552	03	100 % RPM		TAKEOFF	T-44	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 89
N552051AI	552	05	30 % RPM		LANDING	T-44	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 89
N553031AI	553	03	1550 LBS		TAKEOFF	T-45	1000 FT	160 KTS	INM57 CESSNA BUS JET+ 0dB	26 NOV 89
N553041AI	553	04	600 LBS		CRUISE	T-45	1000 FT	160 KTS	INM57 CESSNA BUS JET+ 0dB	26 NOV 89
N553051AI	553	05	300 LBS		LANDING	T-45	1000 FT	160 KTS	INM57 CESSNA BUS JET+ 0dB	26 NOV 89
N553061AI	553	06	1200 LBS		INTERMEDIATE	T-45	1000 FT	160 KTS	INM57 CESSNA BUS JET+ 0dB	26 NOV 89

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

COMDECK NAME	ACC	OPC	POWER SETTING FIRST	VALUE&UNITS SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	DRAG CONFIGURATION	DATE OF OMEGA 6 RUN
N554031AI	554	03	102 % RPM		TAKEOFF POWER	TR-1	1000 FT	300 KTS	F-105 + 0.00dB	26 NOV 89
N554051AI	554	05	96.5 % RPM		APPROACH POWER	TR-1	1000 FT	210 KTS	F-105 + 0.00dB	26 NOV 89
N554061AI	554	06	93 % RPM		INTERMEDIATE POWER	TR-1	1000 FT	290 KTS	F-105 + 0.00dB	26 NOV 89
N555031AI	555	03	100 % RPM		TAKEOFF	U-6	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N555051AI	555	05	30 % RPM		LANDING	U-6	1000 FT	160 KTS	INM75 SINGLE ENGINE PROP	26 NOV 89
N556031AI	556	03	100 % RPM		TAKEOFF	U-21	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 89
N556051AI	556	05	30 % RPM		LANDING	U-21	1000 FT	160 KTS	INM73 BEECH KING AIR	26 NOV 89
N566031AI	566	03	99 % NF	92.2 % NC	TAKEOFF POWER	T-1	1000 FT	160 KTS	INM60 MU-3001(IMIL+2.6dB)	22 MAR 91
N566141AI	566	14	85 % NF	85.5 % NC	INTERMED POWER (MIL)	T-1	1000 FT	160 KTS	INM60 MU-3001	22 MAR 91
N566041AI	566	04	73 % NF	79 % NC	CRUISE POWER	T-1	1000 FT	160 KTS	INM60 MU-3001	22 MAR 91
N566051AI	566	05	45 % NF	61.9 % NC	APPROACH POWER	T-1	1000 FT	160 KTS	INM60 MU-3001	22 MAR 91
N567031AI	567	03	101 % NC	9000 LBS/HR	TAKEOFF POWER	F-117XX	1000 FT	250 KTS	F-117A SURROGATE	21 MAR 91
N567051AI	567	05	86 % NC	4250 LBS/HR	APPROACH POWER	F-117XX	1000 FT	250 KTS	F-117A SURROGATE	21 MAR 91
N567131AI	567	13	68 % NC	2097 LBS/HR	TRAFFIC PATTERN	F-117XX	1000 FT	250 KTS	F-117A SURROGATE	21 MAR 91
N568041AP	568	04	89.9 % RPM	611 C EGT	CRUISE POWER	B-2XX	1000 FT	360 KTS	B-2 SURROGATE	21 MAR 91
N568051AI	568	05	90 % RPM	600 C EGT	APPROACH POWER	B-2XX	1000 FT	165 KTS	B-2 SURROGATE	10 FEB 89
N568141AI	568	14	98.5 % RPM	877 C EGT	INTERMED POWER (MIL)	B-2XX	1000 FT	270 KTS	B-2 SURROGATE	21 MAR 91
N603011AN	603	01	100 % RPM		FLT AT 100 KTS	HH-53	1000 FT	100 KTS	NO SPEED-POWER ADJUSTMENT	27 DEC 79
N604011AN	604	01	100 % RPM		FLT AT 80 KTS	UH-1N	1000 FT	80 KTS	SPEED-POWER ADJUSTED	07 APR 80
N605011AN	605	01	100 % RPM		FLT AT 60 KTS	CH-3C	1000 FT	60 KTS	NO SPEED-POWER ADJUSTMENT	07 APR 80
N605021AN	605	02	100 % RPM		FLT AT 100 KTS	CH-3C	1000 FT	100 KTS	SPEED-POWER ADJUSTED	07 APR 80
N606011AN	606	01	100 % RPM		FLT AT 60 KTS	CH-54B	1000 FT	60 KTS	NO SPEED-POWER ADJUSTMENT	07 APR 80
N606021AN	606	02	100 % RPM		FLT AT 80 KTS	CH-54B	1000 FT	80 KTS	SPEED-POWER ADJUSTED	07 APR 80
N607011AN	607	01	100 % RPM		FLT AT 100 KTS	CH-47C	1000 FT	100 KTS	NO SPEED-POWER ADJUSTMENT	07 APR 80
N608011AN	608	01	100 % RPM		FLT AT 50 KTS	UH-13	1000 FT	50 KTS	NO SPEED-POWER ADJUSTMENT	07 APR 80
N609011AN	609	01	100 % RPM		FLT AT 80 KTS	TH-55A	1000 FT	80 KTS	NO SPEED-POWER ADJUSTMENT	07 APR 80
N610011AN	610	01	100 % RPM		FLT AT 90 KTS	OH-6A	1000 FT	90 KTS	BBN SPEED-POWER ADJUSTED	07 APR 80

END OF DATA FILE. NUMBER OF NORMALIZED DATA DECKS= 304

Table 5. NOISEFILE 6.2 Flyover Reference Noise Database Cont'd

SUMMARY OF GROUND RUNUP DATA IN NOISEFILE 6.2 09 MAY 91 PAGE 1

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N00313A0	003	13	1.05 EPR	28 % NF	1050 LBS/HR	IDLE	E-3A	27 NOV 78	78-008-001	01
N00318A0	003	18	1.47 EPR	85 % NF	6750 LBS/HR	85 % RPM ENG RUNUP	E-3A	27 NOV 78	78-008-001	03
N00321A0	003	21	1.23 EPR	70 % NF	4100 LBS/HR	70 % RPM ENG RUNUP	E-3A	27 NOV 78	78-008-001	02
N00330A0	003	30	1.84 EPR	95 % NF	10000 LBS/HR	TAKEOFF PWR	E-3A	27 NOV 78	78-008-001	04
N00404A0	004	04	100 % RPM	574 C EGT	2250 LBS/HR	MIL PWR	A-37B	12 FEB 76	74-004-040	02
N00413A0	004	13	46 % RPM	355 C EGT	495 LBS/HR	IDLE	A-37B	18 DEC 75	74-004-014	01
N00418A0	004	18	85 % RPM	490 C EGT	1250 LBS/HR	85 % RPM ENG RUNUP	A-37B	12 FEB 76	74-004-040	01
N00505A0	005	05	103 % N1	820 C EGT	17100 LBS/HR	MAX CONT PWR	KC-10A	16 MAR 90	BS-005-001	05
N00513A0	005	13	24 % N1	406 C EGT	1360 LBS/HR	IDLE	KC-10A	16 MAR 90	BS-005-001	01
N00516A0	005	16	95 % N1	750 C EGT	13000 LBS/HR	95 % RPM ENG RUNUP	KC-10A	16 MAR 90	BS-005-001	04
N00521A0	005	21	70 % N1	530 C EGT	5700 LBS/HR	70 % RPM ENG RUNUP	KC-10A	16 MAR 90	BS-005-001	03
N00530A0	005	30	111 % N1	908 C EGT	20000 LBS/HR	TAKEOFF PWR	KC-10A	16 MAR 90	BS-005-001	06
N00557A0	005	57	45 % N1	445 C EGT	2800 LBS/HR	45 % RPM ENG RUNUP	KC-10A	16 MAR 90	BS-005-001	02
N00609A0	006	09	9600 IN-LBS	775 C TIT	1400 LBS/HR	POWER RUNUP	C-130E	01 APR 76	74-004-036	03
N00611A0	006	11	800 IN-LBS	625 C TIT	650 LBS/HR	LOW IDLE	C-130E	01 APR 76	74-004-036	01
N00613A0	006	13	1400 IN-LBS	560 C TIT	780 LBS/HR	IDLE	C-130E	01 APR 76	74-004-036	02
N00630A0	006	30	16800 IN-LBS	970 C TIT	2000 LBS/HR	TAKEOFF PWR	C-130E	01 APR 76	74-004-036	04
N00703A0	007	03	95.1 % NC	807 C EGT	7367 LBS/HR	MAX PWR A/B	F-18	26 MAR 91	AM-007-001	05
N00704A0	007	04	94 % NC	815 C EGT	7260 LBS/HR	MIL PWR	F-18	26 MAR 91	AM-007-001	03
N00713A0	007	13	63 % NC	449 C EGT	624 LBS/HR	IDLE	F-18	26 MAR 91	AM-007-001	01
N00718A0	007	18	85 % NC	655 C EGT	3807 LBS/HR	85 % RPM ENG RUNUP	F-18	26 MAR 91	AM-007-001	02
N00742A0	007	42	95 % NC	813 C EGT	7279 LBS/HR	MIN PWR A/B	F-18	26 MAR 91	AM-007-001	04
N01203A0	012	03	96 % NC	2.14 EPR		MAX PWR A/B	F-102A	27 NOV 78	78-012-001	05
N01204A0	012	04	96 % NC	2.13 EPR	8500 LBS/HR	MIL PWR	F-102A	27 NOV 78	78-012-001	04
N01213A0	012	13	57 % NC	1.01 EPR	1100 LBS/HR	IDLE	F-102A	27 NOV 78	78-012-001	01
N01218A0	012	18	85 % NC	1.43 EPR	3500 LBS/HR	85 % RPM ENG RUNUP	F-102A	27 NOV 78	78-012-001	03
N01220A0	012	20	75 % NC	1.19 EPR	2000 LBS/HR	75 % RPM ENG RUNUP	F-102A	27 NOV 78	78-012-001	02
N01404A0	014	04	100 % NF	99 % NC	770 C EGT	MIL PWR	YC-14	07 MAR 83	76-014-001	05
N01413A0	014	13	22 % NF	64 % NC	360 C EGT	IDLE	YC-14	07 MAR 83	76-014-001	02
N01418A0	014	18	85 % NF	93 % NC	635 C EGT	85 % RPM ENG RUNUP	YC-14	07 MAR 83	76-014-001	04
N01430A0	014	30	111 % NF	102 % NC	845 C EGT	TAKEOFF PWR	YC-14	07 MAR 83	76-014-001	06
N01513A0	015	13	1.04 EPR	375 EGT	1100 LBS/HR	IDLE	YC-15	07 MAR 83	76-015-001	01
N01533A0	015	33	1.8 EPR	465 EGT	6400 LBS/HR	1.8 EPR	YC-15	07 MAR 83	76-015-001	02
N01544A0	015	44	1.08 EPR	400 EGT	1350 LBS/HR	REVERSE IDLE	YC-15	07 MAR 83	76-015-001	04
N01546A0	015	46	1.95 EPR	500 EGT	7400 LBS/HR	1.95 EPR	YC-15	07 MAR 83	76-015-001	03
N02212A0	022	12	1.6 EPR	42 % NF	2300 LBS/HR	HIGH IDLE	C-5A	15 MAR 90	78-015-001	02
N02213A0	022	13	1.18 EPR	23 % NF	1200 LBS/HR	IDLE	C-5A	15 MAR 90	78-015-001	01
N02219A0	022	19	3.5 EPR	79 % NF	8000 LBS/HR	80 % RPM ENG RUNUP	C-5A	15 MAR 90	78-015-001	04
N02222A0	022	22	2.5 EPR	63 % NF	4600 LBS/HR	65 % RPM ENG RUNUP	C-5A	15 MAR 90	78-015-001	03
N02231A0	022	31	4.4 EPR	90 % NF	11000 LBS/HR	MAX PWR	C-5A	15 MAR 90	78-015-001	05

Table 6. NOISEFILE 6.2 Runup Reference Noise Database

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N02308A0	023	08	2200 RPM	22 IN MAP		MAGNETO CHECK	AC-123K	25 FEB 76	74-004-037	03
N02310A0	023	10	2700 RPM	55 IN MAP		METO WITH JETS	AC-123K	25 FEB 76	74-004-037	05
N02313A0	023	13	650 RPM	18 IN MAP		IDLE	AC-123K	25 FEB 76	74-004-037	01
N02315A0	023	15	1000 RPM	17 IN MAP		TAXI	AC-123K	25 FEB 76	74-004-037	02
N02329A0	023	29	2700 RPM	55 IN MAP		METO NO JETS	AC-123K	25 FEB 76	74-004-037	04
N02407A0	024	07	92 % RPM			TRIM CHECK	T-37B	13 FEB 76	74-004-028	02
N02413A0	024	13	37 % RPM			IDLE	T-37B	13 FEB 76	74-004-028	01
N02431A0	024	31	99.5 % RPM			MAX PWR	T-37B	13 FEB 76	74-004-028	03
N02507A0	025	07	97.4 % RPM	1.6 EPR		TRIM CHECK	C-135B	15 FEB 89	AN-025-001	06
N02513A0	025	13	55 % RPM	1.05 EPR		IDLE	C-135B	15 FEB 89	AN-025-001	01
N02517A0	025	17	90 % RPM	1.27 EPR		90 % RPM ENG RUNUP	C-135B	15 FEB 89	AN-025-001	04
N02519A0	025	19	80 % RPM	1.11 EPR		80 % RPM ENG RUNUP	C-135B	15 FEB 89	AN-025-001	03
N02521A0	025	21	70 % RPM	1.06 EPR		70 % RPM ENG RUNUP	C-135B	15 FEB 89	AN-025-001	02
N02531A0	025	31	101 % RPM	1.80 EPR		MAX PWR	C-135B	15 FEB 89	AN-025-001	05
N02613A0	026	13	62 % RPM	1100 LBS/HR		IDLE	C-135A	07 APR 76	74-012-001	01
N02617A0	026	17	90 % RPM	5000 LBS/HR	1.74 EPR	90 % RPM ENG RUNUP	C-135A	07 APR 76	74-012-001	03
N02619A0	026	19	80 % RPM	2200 LBS/HR	1.25 EPR	80 % RPM ENG RUNUP	C-135A	07 APR 76	74-012-001	02
N02631A0	026	31	96 % RPM	8200 LBS/HR	2.34 EPR	MAX PWR	C-135A	07 APR 76	74-012-001	04
N02713A0	027	13	28 % NF	1.04 EPR	1100 LBS/HR	IDLE	C-141A	08 APR 76	74-013-001	01
N02721A0	027	21	70 % NF	1.27 EPR	4100 LBS/HR	70 % RPM ENG RUNUP	C-141A	08 APR 76	74-013-001	02
N02730A0	027	30	95 % NF	1.85 EPR	10000 LBS/HR	TAKEOFF PWR	C-141A	08 APR 76	74-013-001	03
N02808A0	028	08	2050 RPM	27.5 IN MAP		MAGNETO CHECK	C-131B	19 FEB 76	74-004-034	02
N02813A0	028	13	800 RPM	13 IN MAP		IDLE	C-131B	19 FEB 76	74-004-034	01
N02815A0	028	15	1000 RPM	24 IN MAP		TAXI	C-131B	20 FEB 76	74-004-035	01
N02830A0	028	30	2800 RPM	62 IN MAP		TAKEOFF PWR	C-131B	19 FEB 76	74-004-034	03
N02913A0	029	13	35 % RPM			IDLE	T-33A	19 JAN 76	74-004-027	01
N02925A0	029	25	50 % RPM			50 % RPM ENG RUNUP	T-33A	19 JAN 76	74-004-027	02
N02931A0	029	31	100 % RPM			MAX PWR	T-33A	19 JAN 76	74-004-027	03
N03003A0	030	03	100 % RPM			MAX PWR A/B	F-100D	19 DEC 75	74-004-020	02
N03004A0	030	04	97 % RPM			MIL PWR	F-100D	19 DEC 75	74-004-020	01
N03013A0	030	13	53 % RPM			IDLE	F-100D	19 DEC 75	74-004-019	01
N03021A0	030	21	70 % RPM			70 % RPM ENG RUNUP	F-100D	19 DEC 75	74-004-019	02
N03103A0	031	03	100 % RPM			MAX PWR A/B	F-4C	19 DEC 75	74-004-018	01
N03104A0	031	04	100 % RPM			MIL PWR	F-4C	19 DEC 75	74-004-017	03
N03113A0	031	13	65 % RPM			IDLE	F-4C	19 DEC 75	74-004-017	01
N03118A0	031	18	85 % RPM			85 % RPM ENG RUNUP	F-4C	19 DEC 75	74-004-017	02
N03204A0	032	04	100 % RPM	1.93 EPR		MIL PWR	T-39A	20 JAN 76	74-032-001	04
N03213A0	032	13	41 % RPM	1.03 EPR		IDLE	T-39A	20 JAN 76	74-032-001	01
N03218A0	032	18	85 % RPM	1.46 EPR		85 % RPM ENG RUNUP	T-39A	20 JAN 76	74-032-001	03
N03220A0	032	20	75 % RPM	1.25 EPR		75 % RPM ENG RUNUP	T-39A	20 JAN 76	74-032-001	02

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N03303A0	033	03	100 % RPM			MAX PWR A/B	T-38A	17 FEB 76	74-004-029	04
N03304A0	033	04	100 % RPM			MIL PWR	T-38A	17 FEB 76	74-004-029	03
N03307A0	033	07	94 % RPM			TRIM CHECK	T-38A	18 FEB 76	74-004-031	02
N03313A0	033	13	48 % RPM			IDLE	T-38A	17 FEB 76	74-004-029	01
N03320A0	033	20	75 % RPM			75 % RPM ENG RUNUP	T-38A	18 FEB 76	74-004-031	01
N03321A0	033	21	70 % RPM			70 % RPM ENG RUNUP	T-38A	17 FEB 76	74-004-029	02
N03705A0	037	05	77 % NF	91 % NC	2100 LBS/HR	MAX CONT PWR	A-10A	06 FEB 76	75-037-001	02
N03713A0	037	13	25 % NF	64 % NC	400 LBS/HR	IDLE	A-10A	06 FEB 76	75-037-001	01
N03730A0	037	30	84 % NF	95 % NC	2750 LBS/HR	TAKEOFF PWR	A-10A	06 FEB 76	75-037-001	03
N03801A0	038	01	89 % NC	950 C TIT		MAX PWR ZONE 5 A/B	F-16	13 APR 76	75-038-001	04
N03806A0	038	06	90 % NC	934 C TIT		INTERMED PWR (MIL)	F-16	13 APR 76	75-038-001	03
N03813A0	038	13	62 % NC	483 C TIT		IDLE	F-16	13 APR 76	75-038-001	01
N03819A0	038	19	80 % NC	620 C TIT		80 % RPM ENG RUNUP	F-16	13 APR 76	75-038-001	02
N03903A0	039	03	97.6 % RPM	1310 C TIT		MAX PWR A/B	B-1	16 MAR 90	76-039-001	04
N03906A0	039	06	97.2 % RPM	1317 C TIT		INTERMED PWR (MIL)	B-1	16 MAR 90	76-039-001	03
N03913A0	039	13	70.5 % RPM	848 C TIT		IDLE	B-1	16 MAR 90	76-039-001	01
N04313A0	043	13	61 % RPM	300 C EGT	1.05 EPR	IDLE	B-52G	18 DEC 75	74-004-015	01
N04317A0	043	17	90 % RPM	520 C EGT	2.04 EPR	90 % RPM ENG RUNUP	B-52G	18 DEC 75	74-004-015	03
N04319A0	043	19	80 % RPM	340 C EGT	1.35 EPR	80 % RPM ENG RUNUP	B-52G	18 DEC 75	74-004-015	02
N04331A0	043	31	94 % RPM	580 C EGT	2.45 EPR	MAX PWR	B-52G	18 DEC 75	74-004-015	04
N04413A0	044	13	1000 LBS/HR	1.05 EPR	60 % RPM	IDLE	B-52H	03 MAY 76	75-044-001	01
N04416A0	044	16	5000 LBS/HR	1.33 EPR	95 % RPM	95 % RPM ENG RUNUP	B-52H	03 MAY 76	75-044-001	03
N04419A0	044	19	1900 LBS/HR	1.08 EPR	80 % RPM	80 % RPM ENG RUNUP	B-52H	03 MAY 76	75-044-001	02
N04431A0	044	31	8700 LBS/HR	1.68 EPR	104 % RPM	MAX PWR	B-52H	03 MAY 76	75-044-001	05
N04434A0	044	34	7600 LBS/HR	1.62 EPR	100 % RPM	NORMAL RATED THRUST	B-52H	03 MAY 76	75-044-001	04
N04503A0	045	03	100 % RPM			MAX PWR A/B	F-104D	08 JAN 76	74-004-022	01
N04504A0	045	04	100 % RPM			MIL PWR	F-104D	30 DEC 75	74-004-021	03
N04513A0	045	13	67 % RPM			IDLE	F-104D	30 DEC 75	74-004-021	01
N04518A0	045	18	85 % RPM			85 % RPM ENG RUNUP	F-104D	30 DEC 75	74-004-021	02
N04603A0	046	03	100 % RPM	670 C EGT	10000 LBS/HR	MAX PWR A/B	F-5E	06 APR 76	74-004-039	04
N04604A0	046	04	100 % RPM	670 C EGT	3150 LBS/HR	MIL PWR	F-5E	06 APR 76	74-004-039	03
N04613A0	046	13	50 % RPM	395 C EGT	500 LBS/HR	IDLE	F-5E	06 APR 76	74-004-039	01
N04619A0	046	19	80 % RPM	340 C EGT	900 LBS/HR	80 % RPM ENG RUNUP	F-5E	06 APR 76	74-004-039	02
N05751A0	057	51	85 % NF	93 % NC	640 C EGT	85 % RPM/FLPS 30	YC-14 FLAPS 30	07 MAR 83	76-014-001	07
N05752A0	057	52	110 % NF	104 % NC	880 C EGT	TAKEOFF/FLPS 30	YC-14 FLAPS 30	07 MAR 83	76-014-001	08
N05753A0	057	53	22 % NF	64 % NC	340 C EGT	IDLE/FLPS 30	YC-14 FLAPS 30	07 MAR 83	76-014-001	09
N05855A0	058	55	22 % NF	64 % NC	420 C EGT	IDLE/THRUSTER	YC-14 THRUSTER	07 MAR 83	76-014-001	10
N05856A0	058	56	85 % NF	96 % NC	660 C EGT	85% RPM/THRUSTER	YC-14 THRUSTER	07 MAR 83	76-014-001	11
N05945A0	059	45	1.95 EPR	500 EGT	7800 LBS/HR	REVERSE STOP	YC-15 FLAPS 24	07 MAR 83	76-015-001	05
N05947A0	059	47	1.04 EPR	370 EGT	1000 LBS/HR	IDLE/FLAPS 24 DEG	YC-15 FLAPS 24	07 MAR 83	76-015-001	06
N05948A0	059	48	2.24 EPR	580 EGT	10000 LBS/HR	TAKEOFF/FLAPS 24 DEG	YC-15 FLAPS 24	07 MAR 83	76-015-001	07

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N06101A0	061	01	90 % NC	930 C FTIT	39200 LBS/HR	MAX PWR ZONE 5 A/B	F-15A	17 DEC 75	74-004-010	04
N06106A0	061	06	90 % NC	930 C FTIT	7850 LBS/HR	INTERMED PWR (MIL)	F-15A	17 DEC 75	74-004-010	03
N06113A0	061	13	63 % NC	395 C FTIT	950 LBS/HR	IDLE	F-15A	17 DEC 75	74-004-010	01
N06119A0	061	19	80 % NC	690 C FTIT	4150 LBS/HR	80 % RPM ENG RUNUP	F-15A	17 DEC 75	74-004-010	02
N06605A0	066	05	99 % NF	91.4 % NC	1570 LBS/HR	MAX CONT PWR	T-1	22 MAR 91	FY-066-001	05
N06613A0	066	13	31 % NF	52 % NC	210 LBS/HR	IDLE	T-1	22 MAR 91	FY-066-001	01
N06617A0	066	17	90 % NF	87.2 % NC	1210 LBS/HR	90 % RPM ENG RUNUP	T-1	22 MAR 91	FY-066-001	04
N06619A0	066	19	80 % NF	83 % NC	885 LBS/HR	80 % RPM ENG RUNUP	T-1	22 MAR 91	FY-066-001	03
N06621A0	066	21	70 % NF	78 % NC	640 LBS/HR	70 % RPM ENG RUNUP	T-1	22 MAR 91	FY-066-001	02
N07004A0	070	04	101 % RPM			MIL PWR	B-57G	31 MAR 76	74-004-016	03
N07013A0	070	13	50 % RPM			IDLE	B-57G	31 MAR 76	74-004-016	01
N07018A0	070	18	85 % RPM			85 % RPM ENG RUNUP	B-57G	31 MAR 76	74-004-016	02
N07103A0	071	03	96 % NC	2.04 EPR		MAX PWR A/B	F-101B	27 NOV 78	78-011-001	05
N07104A0	071	04	95.5 % NC	2.10 EPR	7600 LBS/HR	MIL PWR	F-101B	27 NOV 78	78-011-001	04
N07113A0	071	13	62 % NC	1.01 EPR	1150 LBS/HR	IDLE	F-101B	27 NOV 78	78-011-001	01
N07117A0	071	17	90 % NC	1.58 EPR	4350 LBS/HR	90 % RPM ENG RUNUP	F-101B	27 NOV 78	78-011-001	03
N07119A0	071	19	80 % NC	1.25 EPR	2450 LBS/HR	80 % RPM ENG RUNUP	F-101B	27 NOV 78	78-011-001	02
N07209A0	072	09	2450 RPM	35 IN MAP		POWER RUNUP	C-7A	18 MAY 76	74-072-001	03
N07213A0	072	13	600 RPM	19 IN MAP		IDLE	C-7A	18 MAY 76	74-072-001	01
N07215A0	072	15	1000 RPM	20 IN MAP		TAXI	C-7A	18 MAY 76	74-072-001	02
N07231A0	072	31	2675 RPM	50 IN MAP		MAX PWR	C-7A	18 MAY 76	74-072-001	04
N07313A0	073	13	1.05 EPR	375 C EGT	1000 LBS/HR	IDLE	C-9A	06 FEB 76	74-073-001	01
N07330A0	073	30	2.0 EPR	510 C EGT	8000 LBS/HR	TAKEOFF PWR	C-9A	06 FEB 76	74-073-001	04
N07332A0	073	32	1.7 EPR	460 C EGT	5800 LBS/HR	1.7 EPR	C-9A	06 FEB 76	74-073-001	02
N07333A0	073	33	1.8 EPR	480 C EGT	6600 LBS/HR	1.8 EPR	C-9A	06 FEB 76	74-073-001	03
N07408A0	074	08	2100 RPM	28.5 IN MAP		MAGNETO CHECK	C-119L	18 MAY 76	74-074-001	04
N07413A0	074	13	750 RPM	25 IN MAP		IDLE	C-119L	18 MAY 76	74-074-001	01
N07415A0	074	15	1000 RPM	24.5 IN MAP		TAXI	C-119L	18 MAY 76	74-074-001	02
N07431A0	074	31	2900 RPM	59 IN MAP		MAX PWR	C-119L	18 MAY 76	74-074-001	05
N07436A0	074	36	1800 RPM	26 IN MAP		PROP SPEED CHECK	C-119L	18 MAY 76	74-074-001	03
N07508A0	075	08	2050 RPM	28.8 IN MAP		MAGNETO CHECK	C-121	17 MAY 76	74-075-001	04
N07513A0	075	13	700 RPM	26.3 IN MAP		IDLE	C-121	17 MAY 76	74-075-001	01
N07515A0	075	15	1200 RPM	24 IN MAP		TAXI	C-121	17 MAY 76	74-075-001	02
N07531A0	075	31	2900 RPM	58 IN MAP		MAX PWR	C-121	17 MAY 76	74-075-001	05
N07536A0	075	36	1700 RPM	25.2 IN MAP		PROP SPEED CHECK	C-121	17 MAY 76	74-075-001	03
N07604A0	076	04	3400 RPM			MIL PWR	U-4B	27 MAY 76	75-002-050	02
N07613A0	076	13	1000 RPM			IDLE	U-4B	27 MAY 76	75-002-050	01
N07703A0	077	03	102 % NC	2.41 EPR		MAX PWR A/B	F-105D	27 NOV 78	78-013-001	05
N07704A0	077	04	102 % NC	2.41 EPR	11000 LBS/HR	MIL PWR	F-105D	27 NOV 78	78-013-001	04
N07713A0	077	13	69 % NC	1.17 EPR	1700 LBS/HR	IDLE	F-105D	27 NOV 78	78-013-001	01
N07717A0	077	17	90 % NC	1.68 EPR	5550 LBS/HR	90 % NC ENG RUNUP	F-105D	27 NOV 78	78-013-001	03
N07719A0	077	19	80 % NC	1.30 EPR	2800 LBS/HR	80 % RPM ENG RUNUP	F-105D	27 NOV 78	78-013-001	02

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N07803A0	078	03	102 % RPM			MAX PWR A/B	F-106	02 DEC 81	BN-078-001	05
N07804A0	078	04	102 % RPM			MIL PWR	F-106	02 DEC 81	BN-078-001	04
N07813A0	078	13	59 % RPM			IDLE	F-106	02 DEC 81	BN-078-001	01
N07816A0	078	16	95 % RPM			95 % RPM ENG RUNUP	F-106	02 DEC 81	BN-078-001	03
N07818A0	078	18	85 % RPM			85 % RPM ENG RUNUP	F-106	02 DEC 81	BN-078-001	02
N07902A0	079	02	95 % NC	2.25 EPR	28100 LBS/HR	MAX PWR ZONE 3 A/B	F-111F	06 APR 76	74-079-001	05
N07904A0	079	04	95 % NC	2.21 EPR	8100 LBS/HR	MIL PWR	F-111F	06 APR 76	74-079-001	04
N07913A0	079	13	65 % NC	1.04 EPR	1000 LBS/HR	IDLE	F-111F	06 APR 76	74-079-001	01
N07918A0	079	18	85 % NC	1.63 EPR	4200 LBS/HR	85 % RPM ENG RUNUP	F-111F	06 APR 76	74-079-001	03
N07919A0	079	19	80 % NC	1.44 EPR	2650 LBS/HR	80 % RPM ENG RUNUP	F-111F	06 APR 76	74-079-001	02
N08003A0	080	03	95 % NC	2.00 EPR	45600 LBS/HR	MAX PWR A/B	FB-111A	31 MAR 76	74-004-024	03
N08004A0	080	04	96 % NC	2.00 EPR	6500 LBS/HR	MIL PWR	FB-111A	31 MAR 76	74-004-024	02
N08013A0	080	13	66 % NC	1.00 EPR	900 LBS/HR	IDLE	FB-111A	31 MAR 76	74-004-024	01
N08019A0	080	19	80 % NC	1.44 EPR	2650 LBS/HR	80 % RPM ENG RUNUP	FB-111A	20 MAY 76	74-004-024	04
N08108A0	081	08	29 IN MAP	2050 RPM		MAGNETO CHECK	KC-97L	14 MAY 76	74-081-001	02
N08113A0	081	13	17 IN MAP	900 RPM		IDLE	KC-97L	14 MAY 76	74-081-001	01
N08135A0	081	35	18 IN MAP	900 RPM	40 % RPM	RECIPS AND JETS IDLE	KC-97L	14 MAY 76	74-081-001	04
N08137A0	081	37	58 IN MAP	2650 RPM		MAX POWER NO JETS	KC-97L	14 MAY 76	74-081-001	03
N08138A0	081	38	58 IN MAP	2650 RPM	100 % RPM	MAX POWER WITH JETS	KC-97L	14 MAY 76	74-081-001	05
N08204A0	082	04	101 % RPM	1900 FT-LBS		MIL PWR	OV-10A	31 MAR 76	74-004-026	03
N08215A0	082	15	70 % RPM	600 FT-LBS		TAXI	OV-10A	31 MAR 76	74-004-026	02
N08228A0	082	28	89 % RPM	600 FT-LBS		LOCKED PROPS	OV-10A	31 MAR 76	74-004-026	01
N08313A0	083	13	34 % NF	1.05 EPR	1050 LBS/HR	IDLE	T-43A	08 APR 76	74-083-001	01
N08317A0	083	17	90 % NF	1.84 EPR	7000 LBS/HR	90 % RPM ENG RUNUP	T-43A	08 APR 76	74-083-001	04
N08318A0	083	18	85 % NF	1.70 EPR	5800 LBS/HR	85 % RPM ENG RUNUP	T-43A	08 APR 76	74-083-001	03
N08319A0	083	19	80 % NF	1.50 EPR	4800 LBS/HR	80 % RPM ENG PUNUP	T-43A	08 APR 76	74-083-001	02
N08330A0	083	30	97 % NF	2.01 EPR	8000 LBS/HR	TAKEOFF PWR	T-43A	08 APR 76	74-083-001	05
N08407A0	084	07	1.63 EPR	7800 LBS/HR	97 % RPM	TRIM CHECK	C-18A	29 DEC 88	FA-084-001	05
N08413A0	084	13	1.06 EPR	1200 LBS/HR	57 % RPM	IDLE	C-18A	29 DEC 88	FA-084-001	01
N08417A0	084	17	1.33 EPR	4900 LBS/HR	90 % RPM	90 % RPM ENG RUNUP	C-18A	29 DEC 88	FA-084-001	04
N08419A0	084	19	1.10 EPR	2400 LBS/HR	80 % RPM	80 % RPM ENG RUNUP	C-18A	29 DEC 88	FA-084-001	03
N08421A0	084	21	1.07 EPR	1600 LBS/HR	70 % RPM	70 % RPM ENG RUNUP	C-18A	29 DEC 88	FA-084-001	02
N08431A0	084	31	1.84 EPR	10000 LBS/HR	100 % RPM	MAX PWR	C-18A	29 DEC 88	FA-084-001	06
N08504A0	085	04	96 % N1	818 C EGT	1719 LBS/HR	MIL PWR	C-21A	29 OCT 85	CY-085-001	05
N08513A0	085	13	60 % N1	560 C EGT	520 LBS/HR	IDLE	C-21A	29 OCT 85	CY-085-001	01
N08517A0	085	17	90 % N1	750 C EGT	1359 LBS/HR	90 % RPM ENG RUNUP	C-21A	29 OCT 85	CY-085-001	04
N08519A0	085	19	80 % N1	683 C EGT	984 LBS/HR	80 % RPM ENG RUNUP	C-21A	29 OCT 85	CY-085-001	03
N08521A0	085	21	70 % N1	623 C EGT	736 LBS/HR	70 % RPM ENG RUNUP	C-21A	29 OCT 85	CY-085-001	02
N08604A0	086	04	90 % N1	780 C EGT	7900 LBS/HR	MIL PWR	KC-135R	15 MAR 90	CZ-086-001	05
N08613A0	086	13	18.9 % N1	490 C EGT	650 LBS/HR	IDLE	KC-135R	15 MAR 90	CZ-086-001	01
N08619A0	086	19	80 % N1	678 C EGT	5600 LBS/HR	80 % RPM ENG RUNUP	KC-135R	15 MAR 90	CZ-086-001	04
N08621A0	086	21	70 % N1	591 C EGT	4000 LBS/HR	70 % RPM ENG RUNUP	KC-135R	15 MAR 90	CZ-086-001	03
N08623A0	086	23	60 % N1	540 C EGT	3000 LBS/HR	60 % RPM ENG RUNUP	KC-135R	15 MAR 90	CZ-086-001	02

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	POWER SETTING VALUES AND UNITS FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N13004A0	130	04	99 % NC	650 C EGT	8000 LBS/HR	MIL PWR	A-4C	26 MAY 76	74-004-001	03
N13013A0	130	13	57 % NC	250 C EGT	800 LBS/HR	IDLE	A-4C	26 MAY 76	74-004-001	01
N13020A0	130	20	75 % NC	300 C EGT	1500 LBS/HR	75 % RPM ENG RUNUP	A-4C	26 MAY 76	74-004-001	02
N13103A0	131	03	100 % RPM	630 C EGT	44500 LBS/HR	MAX PWR A/B	A-5C	31 OCT 75	74-004-002	04
N13104A0	131	04	100 % RPM	630 C EGT	7800 LBS/HR	MIL PWR	A-5C	31 OCT 75	74-004-002	03
N13113A0	131	13	65 % RPM	400 C EGT	1000 LBS/HR	IDLE	A-5C	31 OCT 75	74-004-002	01
N13119A0	131	19	80 % RPM	375 C EGT	2000 LBS/HR	80 % RPM ENG RUNUP	A-5C	31 OCT 75	74-004-002	02
N13204A0	132	04	99 % RPM	650 C EGT	8000 LBS/HR	MIL PWR	A-6A	31 OCT 75	74-004-003	03
N13213A0	132	13	60 % RPM	250 C EGT	800 LBS/HR	IDLE	A-6A	31 OCT 75	74-004-003	01
N13220A0	132	20	75 % RPM	300 C EGT	1500 LBS/HR	75 % RPM ENG RUNUP	A-6A	31 OCT 75	74-004-003	02
N13306A0	133	06	94 % NC	9000 LBS/HR	590 C TOT	INTERMED PWR (MIL)	A-7E	04 NOV 75	74-004-004	04
N13313A0	133	13	55 % NC	1200 LBS/HR	432 C TOT	IDLE	A-7E	04 NOV 75	74-004-004	01
N13318A0	133	18	85 % NC	3700 LBS/HR	400 C TOT	85 % RPM ENG RUNUP	A-7E	04 NOV 75	74-004-004	03
N13321A0	133	21	70 % NC	1550 LBS/HR	422 C TOT	70 % RPM ENG RUNUP	A-7E	04 NOV 75	74-004-004	02
N13331A0	133	31	99.5 % NC	8200 LBS/HR	574 C TOT	MAX PWR	A-7E	07 APR 76	74-004-012	01
N13413A0	134	13	27 % RPM	325 C EGT	1200 LBS/HR	IDLE	AV-8A	06 NOV 75	74-004-005	01
N13424A0	134	24	55 % RPM	350 C EGT	2820 LBS/HR	55 % RPM ENG RUNUP	AV-8A	06 NOV 75	74-004-005	02
N13426A0	134	26	98 % RPM	680 C EGT	12360 LBS/HR	50 FT HOVER	AV-8A	06 NOV 75	74-004-005	03
N13602A0	136	02	102 % NC	1180 C TIT		MAX PWR ZONE 3 A/B	F-14A	03 NOV 75	74-004-006	04
N13604A0	136	04	102 % NC	1180 C TIT	7200 LBS/HR	MIL PWR	F-14A	03 NOV 75	74-004-006	03
N13613A0	136	13	70 % NC	590 C TIT	950 LBS/HR	IDLE	F-14A	03 NOV 75	74-004-006	01
N13619A0	136	19	80 % NC	630 C TIT	1600 LBS/HR	80 % RPM ENG RUNUP	F-14A	03 NOV 75	74-004-006	02
N13709A0	137	09	1850 SHP	775 C TIT	1400 LBS/HR	POWER RUNUP	P-3A	12 MAY 76	74-004-007	03
N13713A0	137	13	170 SHP	611 C TIT	660 LBS/HR	IDLE	P-3A	07 NOV 75	74-004-007	01
N13730A0	137	30	3800 SHP	965 C TIT	2120 LBS/HR	TAKEOFF PWR	P-3A	07 NOV 75	74-004-007	02
N13811A0	138	11	64.7 % NC	1800 RPM NF	596 C ITT	LOW IDLE	S-3A	07 NOV 75	74-004-008	01
N13812A0	138	12	73 % NC	2600 RPM NF	488 C ITT	HIGH IDLE	S-3A	07 NOV 75	74-004-008	02
N13827A0	138	27	93 % NC	6300 RPM NF	760 C ITT	T5 DISABLE	S-3A	07 NOV 75	74-004-008	03
N13831A0	138	31	96 % NC	6600 RPM NF	804 C ITT	MAX PWR	S-3A	07 NOV 75	74-004-008	04
N13913A0	139	13	50 % RPM	550 C EGT	640 LBS/HR	IDLE	T-2C	07 NOV 75	74-004-009	01
N13921A0	139	21	70 % RPM	596 C EGT		70 % RPM ENG RUNUP	T-2C	07 MAY 76	74-004-009	03
N13931A0	139	31	100 % RPM	665 C EGT	2675 LBS/HR	MAX PWR	T-2C	07 NOV 75	74-004-009	02
N14005A0	140	05	95 % RPM	11400 LBS/HR		MAX CONT PWR	AV-8B	07 MAR 83	BY-001-001	05
N14013A0	140	13	27 % RPM	1200 LBS/HR		IDLE	AV-8B	07 MAR 83	BY-001-001	01
N14018A0	140	18	85 % RPM	7920 LBS/HR		85 % RPM ENG RUNUP	AV-8B	07 MAR 83	BY-001-001	04
N14021A0	140	21	70 % RPM	4800 LBS/HR		70 % RPM ENG RUNUP	AV-8B	07 MAR 83	BY-001-001	03
N14024A0	140	24	55 % RPM	2880 LBS/HR		55 % RPM ENG RUNUP	AV-8B	07 MAR 83	BY-001-001	02
N22213A0	222	13	10 % SLTT	23 % NF		IDLE	L-1011-1	10 APR 80	AV-851-001	04
N22218A0	222	18	80 % SLTT	85 % NF		85 % RPM ENG RUNUP	L-1011-1	10 APR 80	AV-851-001	01
N22219A0	222	19	65 % SLTT	81 % NF		80 % RPM ENG RUNUP	L-1011-1	10 APR 80	AV-851-001	02
N22222A0	222	22	40 % SLTT	67 % NF		65 % RPM ENG RUNUP	L-1011-1	10 APR 80	AV-851-001	03

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

SUMMARY OF GROUND RUNUP DATA IN NOISEFILE 6.2 09 MAY 91 PAGE 7

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N35003A0	350	03	99 % RPM	650 C EGT	7000 LBS/HR	MAX PWR A/B	HUSH HOUSE(F-4 A/C)	15 MAR 90	BF-702-001	04
N35004A0	350	04	99 % RPM	650 C EGT	7000 LBS/HR	MIL PWR	HUSH HOUSE(F-4 A/C)	15 MAR 90	BF-702-001	03
N35013A0	350	13	65 % RPM	380 C EGT	1100 LBS/HR	IDLE	HUSH HOUSE(F-4 A/C)	15 MAR 90	BF-702-001	01
N35018A0	350	18	85 % RPM	440 C EGT	3000 LBS/HR	85 % RPM ENG RUNUP	HUSH HOUSE(F-4 A/C)	15 MAR 90	BF-702-001	02
N35103A0	351	03	92 % RPM	37000 LBS/HR	915 C TIT	MAX PWR A/B	HUSH HOUSE(F-15 A/C)	15 MAR 90	BF-704-001	04
N35104A0	351	04	92 % RPM	8700 LBS/HR	915 C TIT	MIL PWR	HUSH HOUSE(F-15 A/C)	15 MAR 90	BF-704-001	03
N35113A0	351	13	68 % RPM	1100 LBS/HR	420 C TIT	IDLE	HUSH HOUSE(F-15 A/C)	15 MAR 90	BF-704-001	01
N35119A0	351	19	80 % RPM	4600 LBS/HR	815 C TIT	80 % RPM ENG RUNUP	HUSH HOUSE(F-15 A/C)	15 MAR 90	BF-704-001	02
N35203A0	352	03	92 % RPM	37300 LBS/HR	925 C TIT	MAX PWR A/B	HUSH HOUSE(F-16 A/C)	15 MAR 90	BF-705-001	04
N35204A0	352	04	92 % RPM	7200 LBS/HR	925 C TIT	MIL PWR	HUSH HOUSE(F-16 A/C)	15 MAR 90	BF-705-001	03
N35213A0	352	13	68 % RPM	1000 LBS/HR	450 C TIT	IDLE	HUSH HOUSE(F-16 A/C)	15 MAR 90	BF-705-001	01
N35219A0	352	19	80 % RPM	4500 LBS/HR	820 C TIT	80 % RPM ENG RUNUP	HUSH HOUSE(F-16 A/C)	15 MAR 90	BF-705-001	02
N35303A0	353	03	103 % RPM	2.43 EPR	623 C EGT	MAX PWR A/B	HUSH HOUSE(F-105 A/C)	15 MAR 90	BF-706-001	03
N35304A0	353	04	103 % RPM	2.35 EPR	614 C EGT	MIL PWR	HUSH HOUSE(F-105 A/C)	15 MAR 90	BF-706-001	02
N35317A0	353	17	90 % RPM	1.68 EPR		90 % RPM ENG RUNUP	HUSH HOUSE(F-105 A/C)	15 MAR 90	BF-706-001	01
N35403A0	354	03	100 % RPM	1.99 EPR	9000 LBS/HR	MAX PWR A/B	HUSH HOUSE(F-106 A/C)	15 MAR 90	BF-707-001	04
N35404A0	354	04	100 % RPM	1.99 EPR	9000 LBS/HR	MIL PWR	HUSH HOUSE(F-106 A/C)	15 MAR 90	BF-707-001	03
N35416A0	354	16	95 % RPM	1.65 EPR	6000 LBS/HR	95 % RPM ENG RUNUP	HUSH HOUSE(F-106 A/C)	15 MAR 90	BF-707-001	02
N35418A0	354	18	85 % RPM	1.31 EPR	3100 LBS/HR	85 % RPM ENG RUNUP	HUSH HOUSE(F-106 A/C)	15 MAR 90	BF-707-001	01
N35503A0	355	03	96 % RPM	2.39 EPR	49800 LBS/HR	MAX PWR A/B	HUSH HOUSE(F-111F A/C)	15 MAR 90	BF-708-001	05
N35504A0	355	04	96 % RPM	2.27 EPR	8200 LBS/HR	MIL PWR	HUSH HOUSE(F-111F A/C)	15 MAR 90	BF-708-001	04
N35516A0	355	16	95 % RPM	2.20 EPR	7800 LBS/HR	95 % RPM ENG RUNUP	HUSH HOUSE(F-111F A/C)	15 MAR 90	BF-708-001	03
N35518A0	355	18	85 % RPM	1.61 EPR	4100 LBS/HR	85 % RPM ENG RUNUP	HUSH HOUSE(F-111F A/C)	15 MAR 90	BF-708-001	02
N35519A0	355	19	80 % RPM	1.38 EPR	2700 LBS/HR	80 % RPM ENG RUNUP	HUSH HOUSE(F-111F A/C)	15 MAR 90	BF-708-001	01
N35603A0	356	03	100 % RPM	645 C TIT	2100 LBS/HR	MAX PWR A/B	HUSH HOUSE(T-38 A/C)	15 MAR 90	BF-709-001	03
N35604A0	356	04	100 % RPM	645 C TIT	2100 LBS/HR	MIL PWR	HUSH HOUSE(T-38 A/C)	15 MAR 90	BF-709-001	02
N35619A0	356	19	80 % RPM	425 C TIT	900 LBS/HR	80 % RPM ENG RUNUP	HUSH HOUSE(T-38 A/C)	15 MAR 90	BF-709-001	01
N35704A0	357	04	99 % RPM	8903 LBS/HR	12854 LBS	MIL PWR	HUSH HOUSE(TF41-A-1 ENG.)	15 MAR 90	BF-711-001	03
N35705A0	357	05	95 % RPM	7409 LBS/HR	10992 LBS	MAX CONT PWR	HUSH HOUSE(TF41-A-1 ENG.)	15 MAR 90	BF-711-001	02
N35718A0	357	18	85 % RPM	3401 LBS/HR	5118 LBS	85 % RPM ENG RUNUP	HUSH HOUSE(TF41-A-1 ENG.)	15 MAR 90	BF-711-001	01
N35804A0	358	04	100 % RPM	9720 LBS	8349 LBS/HR	MIL PWR	HUSH HOUSE(J79-GE-15 ENG)	15 MAR 90	BF-712-001	02
N35818A0	358	18	85 % RPM	3514 LBS	2980 LBS/HR	85 % RPM ENG RUNUP	HUSH HOUSE(J79-GE-15 ENG)	15 MAR 90	BF-712-001	01
N35903A0	359	03	92 % RPM	2.4 EPR	41593 LBS/HR	MAX PWR A/B	HUSH HOUSE(F100-PW-100 E)	15 MAR 90	BF-714-001	03
N35904A0	359	04	92 % RPM	2.4 EPR	8582 LBS/HR	MIL PWR	HUSH HOUSE(F100-PW-100 E)	15 MAR 90	BF-714-001	02
N35919A0	359	19	80 % RPM	1.07 EPR	2774 LBS/HR	80 % RPM ENG RUNUP	HUSH HOUSE(F100-PW-100 E)	15 MAR 90	BF-714-001	01
N36003A0	360	03	103 % RPM	21753 LBS		MAX PWR A/B	HUSH HOUSE(J75-P-19 ENG.)	15 MAR 90	BF-716-001	03
N36004A0	360	04	103 % RPM	14550 LBS		MIL PWR	HUSH HOUSE(J75-P-19 ENG.)	15 MAR 90	BF-716-001	02
N36017A0	360	17	91 % RPM	6446 LBS		90 % RPM ENG RUNUP	HUSH HOUSE(J75-P-19 ENG.)	15 MAR 90	BF-716-001	01

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
			----POWER SETTING VALUES AND UNITS----							
N36103A0	361	03	103 % RPM	19825 LBS		MAX PWR A/B	HUSH HOUSE(J75-P-17 ENG.)	15 MAR 90	BF-717-001	03
N36104A0	361	04	103 % RPM	13260 LBS		MIL PWR	HUSH HOUSE(J75-P-17 ENG.)	15 MAR 90	BF-717-001	02
N36117A0	361	17	90 % RPM	4630 LBS		90 % RPM ENG RUNUP	HUSH HOUSE(J75-P-17 ENG.)	15 MAR 90	BF-717-001	01
N36203A0	362	03	96 % RPM			MAX PWR A/B	HUSH HOUSE(TF30-P-100 E)	15 MAR 90	BF-718-001	03
N36204A0	362	04	96 % RPM			MIL PWR	HUSH HOUSE(TF30-P-100 E)	15 MAR 90	BF-718-001	02
N36218A0	362	18	85 % RPM			85 % RPM ENG RUNUP	HUSH HOUSE(TF30-P-100 E)	15 MAR 90	BF-718-001	01
N36304A0	363	04	96 % RPM	8000 LBS/HR		MIL PWR	(AF32A-19) A-7 SUPP	15 MAR 90	77-833-001	04
N36313A0	363	13	55 % RPM	1000 LBS/HR		IDLE	(AF32A-19) A-7 SUPP	15 MAR 90	77-833-001	01
N36318A0	363	18	85 % RPM	3200 LBS/HR		85 % RPM ENG RUNUP	(AF32A-19) A-7 SUPP	15 MAR 90	77-833-001	03
N36321A0	363	21	70 % RPM	1500 LBS/HR		70 % RPM ENG RUNUP	(AF32A-19) A-7 SUPP	15 MAR 90	77-833-001	02
N36404A0	364	04	97.7 % RPM	9000 LBS/HR	572 C EGT	MIL PWR	(AF32A-24) A-7 SUPP	15 MAR 90	78-834-001	04
N36409A0	364	09	70 % RPM	1600 LBS/HR	416 C EGT	POWER RUNUP	(AF32A-24) A-7 SUPP	15 MAR 90	78-834-001	02
N36413A0	364	13	54.4 % RPM	1000 LBS/HR	438 C EGT	IDLE	(AF32A-24) A-7 SUPP	15 MAR 90	78-834-001	01
N36418A0	364	18	85.6 % RPM	3700 LBS/HR	400 C EGT	85 % RPM ENG RUNUP	(AF32A-24) A-7 SUPP	15 MAR 90	78-834-001	03
N36519A0	365	19	80 % RPM	2200 LBS/HR	1.22 EPR	80 % RPM ENG RUNUP	(AF32A-52) KC-135A SUPP	15 MAR 90	77-726-001	01
N36531A0	365	31	96 % RPM	8550 LBS/HR	2.35 EPR	MAX PWR	(AF32A-52) KC-135A SUPP	15 MAR 90	77-726-001	02
N36549A0	365	49	96 % RPM	13000 LBS/HR	2.79 EPR	MAX PWR WET	(AF32A-52) KC-135A SUPP	15 MAR 90	77-726-001	03
N36603A0	366	03	97 % RPM			MAX PWR A/B	(AF32A-16) F-100 SUPP	15 MAR 90	77-730-001	04
N36604A0	366	04	97 % RPM			MIL PWR	(AF32A-16) F-100 SUPP	15 MAR 90	77-730-001	03
N36613A0	366	13	53 % RPM			IDLE	(AF32A-16) F-100 SUPP	15 MAR 90	77-730-001	01
N36621A0	366	21	70 % RPM			70 % RPM ENG RUNUP	(AF32A-16) F-100 SUPP	15 MAR 90	77-730-001	02
N36703A0	367	03	98.5 % RPM	660 C EGT		MAX PWR A/B	(AF32A-14) F-4 SUPP	15 MAR 90	77-731-001	03
N36704A0	367	04	98.5 % RPM	660 C EGT		MIL PWR	(AF32A-14) F-4 SUPP	15 MAR 90	77-731-001	02
N36718A0	367	18	85 % RPM	400 C EGT	2850 PPH FF	85 % RPM ENG RUNUP	(AF32A-14) F-4 SUPP	15 MAR 90	77-731-001	01
N36803A0	368	03	100 % RPM	635 C EGT	2100 PSI FF	MAX PWR A/B	(AF32A-18) T-38 SUPP	15 MAR 90	77-733-001	05
N36804A0	368	04	99.5 % RPM	635 C EGT	2100 PSI FF	MIL PWR	(AF32A-18) T-38 SUPP	15 MAR 90	77-733-001	04
N36809A0	368	09	94 % RPM	500 C EGT	1425 PSI FF	POWER RUNUP	(AF32A-18) T-38 SUPP	15 MAR 90	77-733-001	03
N36813A0	368	13	48 % RPM	517 C EGT	500 PSI FF	IDLE	(AF32A-18) T-38 SUPP	15 MAR 90	77-733-001	01
N36820A0	368	20	75 % RPM	405 C EGT	790 PSI FF	75 % RPM ENG RUNUP	(AF32A-18) T-38 SUPP	15 MAR 90	77-733-001	02
N36903A0	369	03	91 % N2	38000 LBS/HR	920 FTIT	MAX PWR A/B	(AF32A-25) F-16 SUPP	15 MAR 90	79-738-001	04
N36904A0	369	04	91 % N2	8150 LBS/HR	920 FTIT	MIL PWR	(AF32A-25) F-16 SUPP	15 MAR 90	79-738-001	03
N36913A0	369	13	65 % N2	850 LBS/HR	440 FTIT	IDLE	(AF32A-25) F-16 SUPP	15 MAR 90	79-738-001	01
N36919A0	369	19	80 % N2	3600 LBS/HR	650 FTIT	80 % RPM ENG RUNUP	(AF32A-25) F-16 SUPP	15 MAR 90	79-738-001	02
N37003A0	370	03	101 % RPM	670 C EGT	8000 PPH FF	MAX PWR A/B	(AF32A-18) F-5 SUPP	15 MAR 90	77-746-001	03
N37004A0	370	04	101 % RPM	670 C EGT	3500 PPH FF	MIL PWR	(AF32A-18) F-5 SUPP	15 MAR 90	77-746-001	02
N37019A0	370	19	80 % RPM	400 C EGT		80 % RPM ENG RUNUP	(AF32A-18) F-5 SUPP	15 MAR 90	77-746-001	01
N37103A0	371	03	91 % RPM	940 C TIT	36900 PPH FF	MAX PWR A/B	(AF32A-23) F-15 SUPP	15 MAR 90	77-761-001	03
N37104A0	371	04	91 % RPM	940 C TIT	7200 PPH FF	MIL PWR	(AF32A-23) F-15 SUPP	15 MAR 90	77-761-001	02
N37119A0	371	19	80 % RPM	690 C TIT	3200 PPH FF	80 % RPM ENG RUNUP	(AF32A-23) F-15 SUPP	15 MAR 90	77-761-001	01

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	----POWER SETTING VALUES AND UNITS---- FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N37203A0	372	03	100 % RPM	2.18 EPR		MAX PWR A/B	(AF32A-17) F-106 SUPP	15 MAR 90	77-778-001	05
N37204A0	372	04	100 % RPM	2.18 EPR	10500 LBS/HR	MIL PWR	(AF32A-17) F-106 SUPP	15 MAR 90	77-778-001	04
N37213A0	372	13	59 % RPM	1.2 EPR	1600 LBS/HR	IDLE	(AF32A-17) F-106 SUPP	15 MAR 90	77-778-001	01
N37216A0	372	16	95 % RPM	2.0 EPR	10000 LBS/HR	95 % RPM ENG RUNUP	(AF32A-17) F-106 SUPP	15 MAR 90	77-778-001	03
N37218A0	372	18	85 % RPM	1.85 EPR	2400 LBS/HR	85 % RPM ENG RUNUP	(AF32A-17) F-106 SUPP	15 MAR 90	77-778-001	02
N37301A0	373	01	96.1 % N2	1104 C TIT	33800 LBS/HR	MAX PWR ZONE 5 A/B	(AF32A-13) F-111A SUPP	15 MAR 90	78-779-001	05
N37302A0	373	02	96.4 % N2	1094 C TIT	20200 LBS/HR	MAX PWR ZONE 3 A/B	(AF32A-13) F-111A SUPP	15 MAR 90	78-779-001	04
N37304A0	373	04	96.5 % N2	1086 C TIT	5900 LBS/HR	MIL PWR	(AF32A-13) F-111A SUPP	15 MAR 90	78-779-001	03
N37313A0	373	13	66.9 % N2	558 C TIT	900 LBS/HR	IDLE	(AF32A-13) F-111A SUPP	15 MAR 90	78-779-001	01
N37320A0	373	20	75 % N2	726 C TIT	1500 LBS/HR	75 % RPM ENG RUNUP	(AF32A-13) F-111A SUPP	15 MAR 90	78-779-001	02
N39103A0	391	03	100 % RPM			MAX PWR A/B	(GRADE I) SUPPRESSORS	19 MAY 78	76-991-001	01
N39203A0	392	03	100 % RPM			MAX PWR A/B	(GRADE II) SUPPRESSORS	19 MAY 78	76-992-001	01
N39303A0	393	03	100 % RPM			MAX PWR A/B	(GRADE III) SUPPRESSORS	19 MAY 78	76-993-001	01
N39403A0	394	03	100 % RPM			MAX PWR A/B	TEST CELL	21 NOV 90	90-994-001	01
N39405A0	394	05	100 % RPM			MAX CONT PWR	TEST CELL	21 NOV 90	90-994-001	02
N39413A0	394	13	70 % RPM			IDLE	TEST CELL	21 NOV 90	90-994-001	03
N39419A0	394	19	80 % RPM			80 % RPM ENG RUNUP	TEST CELL	21 NOV 90	90-994-001	04
N39504A0	395	04	20000 LBS			20000 LBS THRUST	TEST STAND	20 FEB 91	91-995-001	04
N39509A0	395	09	4000 LBS			4000 LBS THRUST	TEST STAND	20 FEB 91	91-995-001	05
N39513A0	395	13	500 LBS			IDLE	TEST STAND	20 FEB 91	91-995-001	01
N50708A0	507	08	2050 RPM	27.5 IN MAP		MAGNETO CHECK	C-118	21 MAY 76	76-507-001	02
N50713A0	507	13	800 RPM	13 IN MAP		IDLE	C-118	21 MAY 76	76-507-001	01
N50715A0	507	15	1000 RPM	24 IN MAP		TAXI	C-118	21 MAY 76	76-507-002	01
N50730A0	507	30	2800 RPM	62 IN MAP		TAKEOFF PWR	C-118	21 MAY 76	76-507-001	03
N50804A0	508	04	100 % RPM	1.93 EPR		MIL PWR	C-140	25 MAY 76	76-508-001	04
N50813A0	508	13	41 % RPM	1.03 EPR		IDLE	C-140	25 MAY 76	76-508-001	01
N50818A0	508	18	85 % RPM	1.46 EPR		85 % RPM ENG RUNUP	C-140	25 MAY 76	76-508-001	03
N50820A0	508	20	75 % RPM	1.25 EPR		75 % RPM ENG RUNUP	C-140	25 MAY 76	76-508-001	02
N50903A0	509	03	100 % RPM			MAX PWR A/B	F-5A&B	13 APR 76	74-509-039	04
N50904A0	509	04	100 % RPM			MIL PWR	F-5A&B	13 APR 76	74-509-039	03
N50913A0	509	13	50 % RPM			IDLE	F-5A&B	13 APR 76	74-509-039	01
N50919A0	509	19	80 % RPM			80 % RPM ENG RUNUP	F-5A&B	13 APR 76	74-509-039	02
N51102A0	511	02	95 % NC			MAX PWR ZONE 3 A/B	F-111D	14 APR 76	74-511-001	05
N51104A0	511	04	95 % NC			MIL PWR	F-111D	14 APR 76	74-511-001	04
N51113A0	511	13	65 % NC			IDLE	F-111D	14 APR 76	74-511-001	01
N51118A0	511	18	85 % NC			85 % RPM ENG RUNUP	F-111D	14 APR 76	74-511-001	03
N51119A0	511	19	80 % NC			80 % RPM ENG RUNUP	F-111D	14 APR 76	74-511-001	02
N51304A0	513	04	97 % RPM			MIL PWR	A-3	02 JUN 76	76-513-001	03
N51313A0	513	13	53 % RPM			IDLE	A-3	02 JUN 76	76-513-001	01
N51321A0	513	21	70 % RPM			70 % RPM ENG RUNUP	A-3	02 JUN 76	76-513-001	02

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	POWER SETTING VALUES AND UNITS FIRST	SECOND	THIRD	OPERATION POWER DESCRIPTION	NOISE SOURCE/SUBJECT FIRST LINE	DATE OF OMEGA 8 RUN	TEST	RUN
N51608A0	516	08	2050 RPM	27.5 IN MAP		MAGNETO CHECK	T-29	24 MAY 76	76-516-001	02
N51613A0	516	13	800 RPM	13 IN MAP		IDLE	T-29	24 MAY 76	76-516-001	01
N51615A0	516	15	1000 RPM	24 IN MAP		TAXI	T-29	25 MAY 76	76-516-002	01
N51630A0	516	30	2800 RPM	62 IN MAP		TAKEOFF PWR	T-29	24 MAY 76	76-516-001	03
N51703A0	517	03	80 % NC			MAX PWR A/B	SR-71	26 APR 76	76-517-001	09
N51704A0	517	04	70 % NC			MIL PWR	SR-71	26 APR 76	76-517-001	07
N51713A0	517	13	20 % NC			IDLE	SR-71	26 APR 76	76-517-001	04
N51725A0	517	25	50 % NC			50 % RPM ENG RUNUP	SR-71	26 APR 76	76-517-001	06
N51742A0	517	42	75 % NC			MIN PWR A/B	SR-71	26 APR 76	76-517-001	08
N51743A0	517	43	30 % NC			30 % RPM ENG RUNUP	SR-71	26 APR 76	76-517-001	05
N51804A0	518	04	100 % RPM			MIL PWR	U-2	27 APR 76	76-518-001	03
N51813A0	518	13	68 % RPM			IDLE	U-2	27 APR 76	76-518-001	01
N51818A0	518	18	85 % RPM			85 % RPM ENG RUNUP	U-2	27 APR 76	76-518-001	02
N51913A0	519	13	61 % RPM	300 C EGT	1.05 EPR	IDLE	B-52B&D&E	13 DEC 76	76-519-001	01
N51917A0	519	17	90 % RPM	520 C EGT	2.04 EPR	90 % RPM ENG RUNUP	B-52B&D&E	13 DEC 76	76-519-001	03
N51919A0	519	19	80 % RPM	340 C EGT	1.35 EPR	80 % RPM ENG RUNUP	B-52B&D&E	13 DEC 76	76-519-001	02
N51931A0	519	31	94 % RPM	580 C EGT	2.45 EPR	MAX PWR	B-52B&D&E	13 DEC 76	76-519-001	04
N52009A0	520	09	9600 IN-LBS	775 C TIT	1400 LBS/HR	POWER RUNUP	C-130A&D	13 DEC 76	76-520-001	03
N52011A0	520	11	800 IN-LBS	625 C TIT	650 LBS/HR	LOW IDLE	C-130A&D	13 DEC 76	76-520-001	01
N52013A0	520	13	1400 IN-LBS	560 C TIT	780 LBS/HR	IDLE	C-130A&D	13 DEC 76	76-520-001	02
N52030A0	520	30	16800 IN-LBS	970 C TIT	2000 LBS/HR	TAKEOFF PWR	C-130A&D	13 DEC 76	76-520-001	04
N52109A0	521	09	9600 IN-LBS	775 C TIT	1400 LBS/HR	POWER RUNUP	C-130H&N&P	14 DEC 76	76-521-001	03
N52111A0	521	11	800 IN-LBS	625 C TIT	650 LBS/HR	LOW IDLE	C-130H&N&P	14 DEC 76	76-521-001	01
N52113A0	521	13	1400 IN-LBS	560 C TIT	780 LBS/HR	IDLE	C-130H&N&P	14 DEC 76	76-521-001	02
N52130A0	521	30	16800 IN-LBS	970 C TIT	2000 LBS/HR	TAKEOFF PWR	C-130H&N&P	14 DEC 76	76-521-001	04
N52703A0	527	03	100 % RPM			MAX PWR A/B	F-8	26 OCT 77	77-527-002	02
N52704A0	527	04	97 % RPM			MIL PWR	F-8	26 OCT 77	77-527-002	01
N52713A0	527	13	53 % RPM			IDLE	F-8	26 OCT 77	77-527-001	01
N52721A0	527	21	70 % RPM			70 % RPM ENG RUNUP	F-8	26 OCT 77	77-527-001	02
N56704A0	567	04	94 % NC	815 C EGT	7260 LBS/HR	MIL PWR	F-117A SURROGATE	26 MAR 91	AM-007-001	03
N56713A0	567	13	63 % NC	449 C EGT	624 LBS/HR	IDLE	F-117A SURROGATE	26 MAR 91	AM-007-001	01
N56718A0	567	18	85 % NC	655 C EGT	3807 LBS/HR	85 % RPM ENG RUNUP	F-117A SURROGATE	26 MAR 91	AM-007-001	02
N56806A0	568	06	97.2 % RPM	1317 C TIT		INTERMED PWR (MIL)	B-2 SURROGATE	26 MAR 91	76-039-001	03
N56813A0	568	13	70.5 % RPM	848 C TIT		IDLE	B-2 SURROGATE	26 MAR 91	76-039-001	01

END OF DATA FILE. NUMBER OF NORMALIZED DATA DECKS= 398

Table 6. NOISEFILE 6.2 Runup Reference Noise Database Cont'd.

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N201031AI	201	03	36000 LBS		TAKEOFF	B747-100	1000 FT	160 KTS	JT9D(BLOW DOOR)	14 JAN 88
N201041AI	201	04	14000 LBS		CRUISE	B747-100	1000 FT	160 KTS	JT9D(BLOW DOOR)	14 JAN 88
N201051AI	201	05	8000 LBS		LANDING	B747-100	1000 FT	160 KTS	JT9D(BLOW DOOR)	14 JAN 88
N201061AI	201	06	28000 LBS		INTERMEDIATE	B747-100	1000 FT	160 KTS	JT9D(BLOW DOOR)	14 JAN 88
N202031AI	202	03	40000 LBS		TAKEOFF	B747-200	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N202041AI	202	04	16000 LBS		CRUISE	B747-200	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N202051AI	202	05	8000 LBS		LANDING	B747-200	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N202061AI	202	06	32000 LBS		INTERMEDIATE	B747-200	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N203031AI	203	03	40000 LBS		TAKEOFF	B747-100QN	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N203041AI	203	04	16000 LBS		CRUISE	B747-100QN	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N203051AI	203	05	8000 LBS		LANDING	B747-100QN	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N203061AI	203	06	32000 LBS		INTERMEDIATE	B747-100QN	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N204031AI	204	03	40000 LBS		TAKEOFF	B747-SP	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N204041AI	204	04	16000 LBS		CRUISE	B747-SP	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N204051AI	204	05	8000 LBS		LANDING	B747-SP	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N204061AI	204	06	32000 LBS		INTERMEDIATE	B747-SP	1000 FT	160 KTS	JT9D(FIXED-LIP)	14 JAN 88
N206031AI	206	03	15000 LBS		TAKEOFF	DC8-20	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N206051AI	206	05	4000 LBS		LANDING	DC8-20	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N207031AI	207	03	15000 LBS		TAKEOFF	B707-120	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N207051AI	207	05	4000 LBS		LANDING	B707-120	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N208031AI	208	03	15000 LBS		TAKEOFF	B720	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N208051AI	208	05	4000 LBS		LANDING	B720	1000 FT	160 KTS	PW-JT4A (SUPP)	14 JAN 88
N209031AI	209	03	15000 LBS		TAKEOFF	B707-320B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N209051AI	209	05	4000 LBS		LANDING	B707-320B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N210031AI	210	03	15000 LBS		TAKEOFF	B707-120B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N210051AI	210	05	4000 LBS		LANDING	B707-120B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N211031AI	211	03	15000 LBS		TAKEOFF	B720B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N211051AI	211	05	4000 LBS		LANDING	B720B	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N212031AI	212	03	15000 LBS		TAKEOFF	DC8-50	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N212051AI	212	05	4000 LBS		LANDING	DC8-50	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N213031AI	213	03	15000 LBS		TAKEOFF	DC8-60	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N213051AI	213	05	4000 LBS		LANDING	DC8-60	1000 FT	160 KTS	PW-JT3D UNTREAT	14 JAN 88
N214031AI	214	03	15500 LBS		TAKEOFF	DC8-70	1000 FT	160 KTS	CFM56 RETROFIT	14 JAN 88
N214051AI	214	05	5000 LBS		LANDING	DC8-70	1000 FT	160 KTS	CFM56 RETROFIT	14 JAN 88
N215031AI	215	03	100 % RPM		TAKEOFF	BAE-146	1000 FT	160 KTS	4-E TF ALF-502R	14 JAN 88
N215051AI	215	05	30 % RPM		LANDING	BAE-146	1000 FT	160 KTS	4-E TF ALF-502R	14 JAN 88

Table 7. NOISEFILE 6.2 Civil Reference Noise Database

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N216031AI	216	03	15500 LBS		TAKEOFF	B707-320QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N216041AI	216	04	5000 LBS		CRUISE	B707-320QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N216051AI	216	05	3000 LBS		LANDING	B707-320QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N216061AI	216	06	11000 LBS		INTERMEDIATE	B707-320QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N217031AI	217	03	15500 LBS		TAKEOFF	DC8-60QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N217041AI	217	04	5000 LBS		CRUISE	DC8-60QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N217051AI	217	05	3000 LBS		LANDING	DC8-60QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N217061AI	217	06	11000 LBS		INTERMEDIATE	DC8-60QN	1000 FT	160 KTS	PW-JT3D(LINED)	14 JAN 88
N218031AI	218	03	32000 LBS		TAKEOFF	CONCORDE	1000 FT	160 KTS	4-E 593 TJ (AB)	14 JAN 88
N218051AI	218	05	10000 LBS		LANDING	CONCORDE	1000 FT	160 KTS	4-E 593 TJ (AB)	14 JAN 88
N219031AI	219	03	36000 LBS		TAKEOFF	DC10-10	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N219051AI	219	05	8000 LBS		LANDING	DC10-10	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N220031AI	220	03	36000 LBS		TAKEOFF	DC10-30	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N220051AI	220	05	8000 LBS		LANDING	DC10-30	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N221031AI	221	03	36000 LBS		TAKEOFF	DC10-40	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N221051AI	221	05	8000 LBS		LANDING	DC10-40	1000 FT	160 KTS	3-E TF CF6	14 JAN 88
N222031AI	222	03	36000 LBS		TAKEOFF	L1011	1000 FT	160 KTS	3-E TF RB211	14 JAN 88
N222051AI	222	05	8000 LBS		LANDING	L1011	1000 FT	160 KTS	3-E TF RB211	14 JAN 88
N223031AI	223	03	36000 LBS		TAKEOFF	L1011-500	1000 FT	160 KTS	3-E TF RB211	14 JAN 88
N223051AI	223	05	8000 LBS		LANDING	L1011-500	1000 FT	160 KTS	3-E TF RB211	14 JAN 88
N224031AI	224	03	14000 LBS		TAKEOFF	B727-2D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N224041AI	224	04	6000 LBS		CRUISE	B727-2D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N224051AI	224	05	3000 LBS		LANDING	B727-2D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N225031AI	225	03	14000 LBS		TAKEOFF	B727-1D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N225041AI	225	04	6000 LBS		CRUISE	B727-1D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N225051AI	225	05	3000 LBS		LANDING	B727-1D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N226031AI	226	03	14000 LBS		TAKEOFF	B727-2D15	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N226041AI	226	04	6000 LBS		CRUISE	B727-2D15	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N226051AI	226	05	3000 LBS		LANDING	B727-2D15	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N227031AI	227	03	14000 LBS		TAKEOFF	B727-2QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N227041AI	227	04	6000 LBS		CRUISE	B727-2QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N227051AI	227	05	3000 LBS		LANDING	B727-2QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N228031AI	228	03	14000 LBS		TAKEOFF	B727-1QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N228041AI	228	04	6000 LBS		CRUISE	B727-1QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N228051AI	228	05	3000 LBS		LANDING	B727-1QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N229031AI	229	03	14000 LBS		TAKEOFF	B727-2QN15	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N229041AI	229	04	6000 LBS		CRUISE	B727-2QN15	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N229051AI	229	05	3000 LBS		LANDING	B727-2QN15	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88

Table 7. NOISEFILE 6.2 Civil Reference Noise Database cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N230031AI	230	03	14000 LBS		TAKEOFF	B727-2D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N230041AI	230	04	6000 LBS		CRUISE	B727-2D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N230051AI	230	05	3000 LBS		LANDING	B727-2D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N231031AI	231	03	40000 LBS		TAKEOFF	A-300	1000 FT	160 KTS	2-E HIGH TB CF6	14 JAN 88
N231051AI	231	05	10000 LBS		LANDING	A-300	1000 FT	160 KTS	2-E HIGH TB CF6	14 JAN 88
N232031AI	232	03	38000 LBS		TAKEOFF	B767-CF6	1000 FT	160 KTS	CF6-80A/JT9D7R4	22 JAN 88
N232051AI	232	05	10000 LBS		LANDING	B767-CF6	1000 FT	160 KTS	CF6-80A/JT9D7R4	22 JAN 88
N233031AI	233	03	38000 LBS		TAKEOFF	B767-JT9	1000 FT	160 KTS	CF6-80A/JT9D7R4	22 JAN 88
N233051AI	233	05	10000 LBS		LANDING	B767-JT9	1000 FT	160 KTS	CF6-80A/JT9D7R4	22 JAN 88
N234031AI	234	03	40000 LBS		TAKEOFF	A-310	1000 FT	160 KTS	2-E HIGH TB CF6	14 JAN 88
N234051AI	234	05	10000 LBS		LANDING	A-310	1000 FT	160 KTS	2-E HIGH TB CF6	14 JAN 88
N235031AI	235	03	16000 LBS		TAKEOFF	B737-300B1	1000 FT	160 KTS	CFM56	14 JAN 88
N235051AI	235	05	4000 LBS		LANDING	B737-300B1	1000 FT	160 KTS	CFM56	14 JAN 88
N236031AI	236	03	16000 LBS		TAKEOFF	B737-300B2	1000 FT	160 KTS	CFM56	14 JAN 88
N236051AI	236	05	4000 LBS		LANDING	B737-300B2	1000 FT	160 KTS	CFM56	14 JAN 88
N237031AI	237	03	14000 LBS		TAKEOFF	BAC-111	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N237041AI	237	04	6000 LBS		CRUISE	BAC-111	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N237051AI	237	05	3000 LBS		LANDING	BAC-111	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 89
N238031AI	238	03	10000 LBS		TAKEOFF	F-28-MK2	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N238041AI	238	04	4000 LBS		CRUISE	F-28-MK2	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N238051AI	238	05	2000 LBS		LANDING	F-28-MK2	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N238061AI	238	06	8000 LBS		INTERMEDIATE	F-28-MK2	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N238131AI	238	13	6000 LBS		TRAFFIC PATTERN	F-28-MK2	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N239031AI	239	03	10000 LBS		TAKEOFF	F-28-MK4	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N239041AI	239	04	4000 LBS		CRUISE	F-28-MK4	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N239051AI	239	05	2000 LBS		LANDING	F-28-MK4	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N239061AI	239	06	8000 LBS		INTERMEDIATE	F-28-MK4	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N239131AI	239	13	6000 LBS		TRAFFIC PATTERN	F-28-MK4	1000 FT	160 KTS	RB183 MK555-15	14 JAN 88
N240031AI	240	03	14000 LBS		TAKEOFF	DC9-30D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N240041AI	240	04	6000 LBS		CRUISE	DC9-30D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N240051AI	240	05	3000 LBS		LANDING	DC9-30D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N241031AI	241	03	14000 LBS		TAKEOFF	DC9-10D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N241041AI	241	04	6000 LBS		CRUISE	DC9-10D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N241051AI	241	05	3000 LBS		LANDING	DC9-10D7	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N242031AI	242	03	14000 LBS		TAKEOFF	B737-D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N242041AI	242	04	6000 LBS		CRUISE	B737-D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88
N242051AI	242	05	3000 LBS		LANDING	B737-D9	1000 FT	160 KTS	JT8D(UNTREATED)	14 JAN 88

Table 7. NOISEFILE 6.2 Civil Reference Noise Database cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N243031AI	243	03	14000 LBS		TAKEOFF	DC9-30QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N243041AI	243	04	6000 LBS		CRUISE	DC9-30QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N243051AI	243	05	3000 LBS		LANDING	DC9-30QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N244031AI	244	03	14000 LBS		TAKEOFF	DC9-10QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N244041AI	244	04	6000 LBS		CRUISE	DC9-10QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N244051AI	244	05	3000 LBS		LANDING	DC9-10QN7	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N245031AI	245	03	14000 LBS		TAKEOFF	B737-QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N245041AI	245	04	6000 LBS		CRUISE	B737-QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N245051AI	245	05	3000 LBS		LANDING	B737-QN9	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N246031AI	246	03	14000 LBS		TAKEOFF	DC9-50D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N246041AI	246	04	6000 LBS		CRUISE	DC9-50D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N246051AI	246	05	3000 LBS		LANDING	DC9-50D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N247031AI	247	03	14000 LBS		TAKEOFF	B737-D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N247041AI	247	04	6000 LBS		CRUISE	B737-D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N247051AI	247	05	3000 LBS		LANDING	B737-D17	1000 FT	160 KTS	JT8D(AC-LINED)	14 JAN 88
N248031AI	248	03	16000 LBS		TAKEOFF	MD-81	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N248041AI	248	04	8000 LBS		CRUISE	MD-81	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N248051AI	248	05	4000 LBS		LANDING	MD-81	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N248061AI	248	06	12000 LBS		INTERMEDIATE	MD-81	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N249031AI	249	03	16000 LBS		TAKEOFF	MD-82	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N249041AI	249	04	8000 LBS		CRUISE	MD-82	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N249051AI	249	05	4000 LBS		LANDING	MD-82	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N249061AI	249	06	12000 LBS		INTERMEDIATE	MD-82	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N250031AI	250	03	16000 LBS		TAKEOFF	MD-83	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N250041AI	250	04	8000 LBS		CRUISE	MD-83	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N250051AI	250	05	4000 LBS		LANDING	MD-83	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N250061AI	250	06	12000 LBS		INTERMEDIATE	MD-83	1000 FT	160 KTS	JT8D-209/217	22 JAN 88
N251031AI	251	03	30000 LBS		TAKEOFF	B757-RR	1000 FT	160 KTS	RB211-535	14 JAN 88
N251041AI	251	04	10000 LBS		CRUISE	B757-RR	1000 FT	160 KTS	RB211-535	14 JAN 88
N251051AI	251	05	5000 LBS		LANDING	B757-RR	1000 FT	160 KTS	RB211-535	14 JAN 88
N253031AI	253	03	100 % RPM		TAKEOFF	COMJET	1000 FT	160 KTS	TURBOJET & FAN	14 JAN 88
N253041AI	253	04	60 % RPM		CRUISE	COMJET	1000 FT	160 KTS	TURBOJET & FAN	14 JAN 88
N253051AI	253	05	30 % RPM		LANDING	COMJET	1000 FT	160 KTS	TURBOJET & FAN	14 JAN 88
N254031AI	254	03	2650 LBS		TAKEOFF	LEAR-35	1000 FT	160 KTS	2-E TF TFE 731	14 JAN 88
N254041AI	254	04	1500 LBS		CRUISE	LEAR-35	1000 FT	160 KTS	2-E TF TFE 731	14 JAN 88
N254051AI	254	05	1000 LBS		LANDING	LEAR-35	1000 FT	160 KTS	2-E TF TFE 731	14 JAN 88
N255031AI	255	03	2600 LBS		TAKEOFF	LEAR-25	1000 FT	160 KTS	2-E TJ CJ610	14 JAN 88
N255041AI	255	04	1800 LBS		CRUISE	LEAR-25	1000 FT	160 KTS	2-E TJ CJ610	14 JAN 88
N255051AI	255	05	700 LBS		LANDING	LEAR-25	1000 FT	160 KTS	2-E TJ CJ610	14 JAN 88

Table 7. NOISEFILE 6.2 Civil Reference Noise Database cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N256031AI	256	03	3750 LBS		TAKEOFF	SABER-80	1000 FT	160 KTS	2-E TF CF700	14 JAN 88
N256041AI	256	04	2500 LBS		CRUISE	SABER-80	1000 FT	160 KTS	2-E TF CF700	14 JAN 88
N256051AI	256	05	850 LBS		LANDING	SABER-80	1000 FT	160 KTS	2-E TF CF700	14 JAN 88
N257031AI	257	03	1550 LBS		TAKEOFF	CESSNA-500	1000 FT	160 KTS	2-E TF JT15D	14 JAN 88
N257041AI	257	04	600 LBS		CRUISE	CESSNA-500	1000 FT	160 KTS	2-E TF JT15D	14 JAN 88
N257051AI	257	05	300 LBS		LANDING	CESSNA-500	1000 FT	160 KTS	2-E TF JT15D	14 JAN 88
N257061AI	257	06	1200 LBS		INTERMEDIATE	CESSNA-500	1000 FT	160 KTS	2-E TF JT15D	14 JAN 88
N258031AI	258	03	5000 LBS		TAKEOFF	CL-600	1000 FT	160 KTS	2-E TF ALF502L	14 JAN 88
N258051AI	258	05	1900 LBS		LANDING	CL-600	1000 FT	160 KTS	2-E TF ALF502L	14 JAN 88
N259031AI	259	03	10000 LBS		TAKEOFF	GULF-GIIB	1000 FT	160 KTS	SPEY MK511	14 JAN 88
N259041AI	259	04	4000 LBS		CRUISE	GULF-GIIB	1000 FT	160 KTS	SPEY MK511	14 JAN 88
N259051AI	259	05	2000 LBS		LANDING	GULF-GIIB	1000 FT	160 KTS	SPEY MK511	14 JAN 88
N259061AI	259	06	8000 LBS		INTERMEDIATE	GULF-GIIB	1000 FT	160 KTS	SPEY MK511	14 JAN 88
N259131AI	259	13	6000 LBS		TRAFFIC PATTERN	GULF-GIIB	1000 FT	160 KTS	SPEY MK511	14 JAN 88
N260031AI	260	03	2100 LBS		TAKEOFF	MU-3001	1000 FT	160 KTS	2-E TF JT15D-5	14 JAN 88
N260041AI	260	04	1500 LBS		CRUISE	MU-3001	1000 FT	160 KTS	2-E TF JT15D-5	14 JAN 88
N260051AI	260	05	670 LBS		LANDING	MU-3001	1000 FT	160 KTS	2-E TF JT15D-5	14 JAN 88
N261031AI	261	03	6000 LBS		TAKEOFF	CL-601	1000 FT	160 KTS	2-E TF CF34	14 JAN 88
N261041AI	261	04	3000 LBS		CRUISE	CL-601	1000 FT	160 KTS	2-E TF CF34	14 JAN 88
N261051AI	261	05	2000 LBS		LANDING	CL-601	1000 FT	160 KTS	2-E TF CF34	14 JAN 88
N261061AI	261	06	5000 LBS		INTERMEDIATE	CL-601	1000 FT	160 KTS	2-E TF CF34	14 JAN 88
N261131AI	261	13	4000 LBS		TRAFFIC PATTERN	CL-601	1000 FT	160 KTS	2-E TF CF34	14 JAN 88
N262031AI	262	03	95.5 % RPM		TAKEOFF	ASTRA-1125	1000 FT	160 KTS	GARRETT TFE 731	14 JAN 88
N262041AI	262	04	86.6 % RPM		CRUISE	ASTRA-1125	1000 FT	160 KTS	GARRETT TFE 731	14 JAN 88
N262051AI	262	05	69.2 % RPM		LANDING	ASTRA-1125	1000 FT	160 KTS	GARRETT TFE 731	14 JAN 88
N263031AI	263	03	100 % RPM		TAKEOFF	ELECTRA188	1000 FT	160 KTS	T56-A-7/501-D13	03 MAR 89
N263051AI	263	05	30 % RPM		LANDING	ELECTRA188	1000 FT	160 KTS	T56-A-7/501-D13	03 MAR 89
N265031AI	265	03	100 % RPM		TAKEOFF	DHC-7	1000 FT	160 KTS	4-E TP PT6A-50	14 JAN 88
N265051AI	265	05	28 % RPM		LANDING	DHC-7	1000 FT	160 KTS	4-E TP PT6A-50	14 JAN 88
N266031AI	266	03	100 % RPM		TAKEOFF	CONVAIR580	1000 FT	160 KTS	ALLISON 501-D13	14 JAN 88
N266051AI	266	05	30 % RPM		LANDING	CONVAIR580	1000 FT	160 KTS	ALLISON 501-D13	14 JAN 88
N267031AI	267	03	100 % RPM		TAKEOFF	BAE-HS-748	1000 FT	160 KTS	RR DART MK532	14 JAN 88
N267041AI	267	04	73 % RPM		CRUISE	BAE-HS-748	1000 FT	160 KTS	RR DART MK532	14 JAN 88
N267051AI	267	05	32 % RPM		LANDING	BAE-HS-748	1000 FT	160 KTS	RR DART MK532	14 JAN 88
N268031AI	268	03	100 % RPM		TAKEOFF	SD3-30	1000 FT	160 KTS	2-E TP PT6A	14 JAN 88
N268041AI	268	04	65 % RPM		CRUISE	SD3-30	1000 FT	160 KTS	2-E TP PT6A	14 JAN 88
N268051AI	268	05	35 % RPM		LANDING	SD3-30	1000 FT	160 KTS	2-E TP PT6A	14 JAN 88

Table 7. NOISEFILE 6.2 Civil Reference Noise Database cont'd

COMDECK NAME	ACC	OPC	POWER SETTING VALUE&UNITS FIRST	SECOND	OPERATION POWER DESCRIPTION	AIRCRAFT NAME	SLANT RANGE	AIR SPEED	ENGINE TYPE	DATE OF OMEGA 6 RUN
N269031AI	269	03	100 % RPM		TAKEOFF	DHC-6A27	1000 FT	160 KTS	2-ENGINE TP	14 JAN 88
N269051AI	269	05	30 % RPM		LANDING	DHC-6A27	1000 FT	160 KTS	2-ENGINE TP	14 JAN 88
N270031AI	270	03	100 % RPM		TAKEOFF	DC-6R2800	1000 FT	160 KTS	4-ENGINE PISTON	14 JAN 88
N270051AI	270	05	30 % RPM		LANDING	DC-6R2800	1000 FT	160 KTS	4-ENGINE PISTON	14 JAN 88
N271031AI	271	03	100 % RPM		TAKEOFF	DC-3R2800	1000 FT	160 KTS	2-E PIST>12500	14 JAN 88
N271051AI	271	05	30 % RPM		LANDING	DC-3R2800	1000 FT	160 KTS	2-E PIST>12500	14 JAN 88
N272031AI	272	03	100 % RPM		TAKEOFF	SAAB-340	1000 FT	160 KTS	2-E TP GE CT7	14 JAN 88
N272041AI	272	04	85 % RPM		CRUISE	SAAB-340	1000 FT	160 KTS	2-E TP GE CT7	14 JAN 88
N272051AI	272	05	35 % RPM		LANDING	SAAB-340	1000 FT	160 KTS	2-E TP GE CT7	14 JAN 88
N273031AI	273	03	100 % RPM		TAKEOFF	CESSNA441	1000 FT	160 KTS	SM 2-ENGINE TP	14 JAN 88
N273051AI	273	05	30 % RPM		LANDING	CESSNA441	1000 FT	160 KTS	SM 2-ENGINE TP	14 JAN 88
N274031AI	274	03	100 % RPM		TAKEOFF	GA-1ENG-VP	1000 FT	160 KTS	1-ENG VAR PITCH	14 JAN 88
N274051AI	274	05	30 % RPM		LANDING	GA-1ENG-VP	1000 FT	160 KTS	1-ENG VAR PITCH	14 JAN 88
N275031AI	275	03	100 % RPM		TAKEOFF	GA-1ENG-FP	1000 FT	160 KTS	1-E FIXED PITCH	14 JAN 88
N275051AI	275	05	30 % RPM		LANDING	GA-1ENG-FP	1000 FT	160 KTS	1-E FIXED PITCH	14 JAN 88
N276031AI	276	03	100 % RPM		TAKEOFF	B-BARON58P	1000 FT	160 KTS	2-E PIST<12500	14 JAN 88
N276051AI	276	05	30 % RPM		LANDING	B-BARON58P	1000 FT	160 KTS	2-E PIST<12500	14 JAN 88
N277031AI	277	03	100 % RPM		TAKEOFF	COMPOS-1EN	1000 FT	160 KTS	1-E 1985 FLEET	14 JAN 88
N277051AI	277	05	30 % RPM		LANDING	COMPOS-1EN	1000 FT	160 KTS	1-E 1985 FLEET	14 JAN 88
N281031AI	281	03	100 % RPM		TAKEOFF	HERCULES	1000 FT	160 KTS	T56-A-15	03 MAR 89
N281051AI	281	05	28 % RPM		LANDING	HERCULES	1000 FT	160 KTS	T56-A-15	03 MAR 89
N282031AI	282	03	14000 LBS		TAKEOFF POWER	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N282141AI	282	14	12000 LBS		INTERMED POWER (MIL)	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N282061AI	282	06	10000 LBS		INTERMEDIATE POWER	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N282131AI	282	13	7000 LBS		TRAFFIC PATTERN	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N282041AI	282	04	5000 LBS		CRUISE POWER	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N282051AI	282	05	3000 LBS		LANDING	B727-EM7	1000 FT	160 KTS	JT8D-7 EM-BI	02 OCT 90
N283031AI	283	03	14000 LBS		TAKEOFF POWER	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90
N283141AI	283	14	12000 LBS		INTERMED POWER (MIL)	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90
N283061AI	283	06	10000 LBS		INTERMEDIATE POWER	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90
N283131AI	283	13	7000 LBS		TRAFFIC PATTERN	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90
N283041AI	283	04	5000 LBS		CRUISE POWER	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90
N283051AI	283	05	3000 LBS		LANDING	B727-EM5	1000 FT	160 KTS	JT8D-15 EM-BI	21 DEC 90

END OF DATA FILE. NUMBER OF NORMALIZED DATA DECKS= 220

Table 7. NOISEFILE 6.2 Civil Reference Noise Database cont'd

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14. Speakman, Jerry D., *Lateral Attenuation of Military Aircraft Flight Noise*, Technical Report AAMRL-TR-89-034, AAMRL, Wright-Patterson AFB, Dayton Ohio, July, 1989.

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APPENDIX A

NMAP 6.0 Flowchart

The following is a program flowchart of NMAP 6.0. Figures 1 through 13-A show the overall structure of the program and the remaining pages show the individual subroutine structures. Subroutines are listed alphabetically.

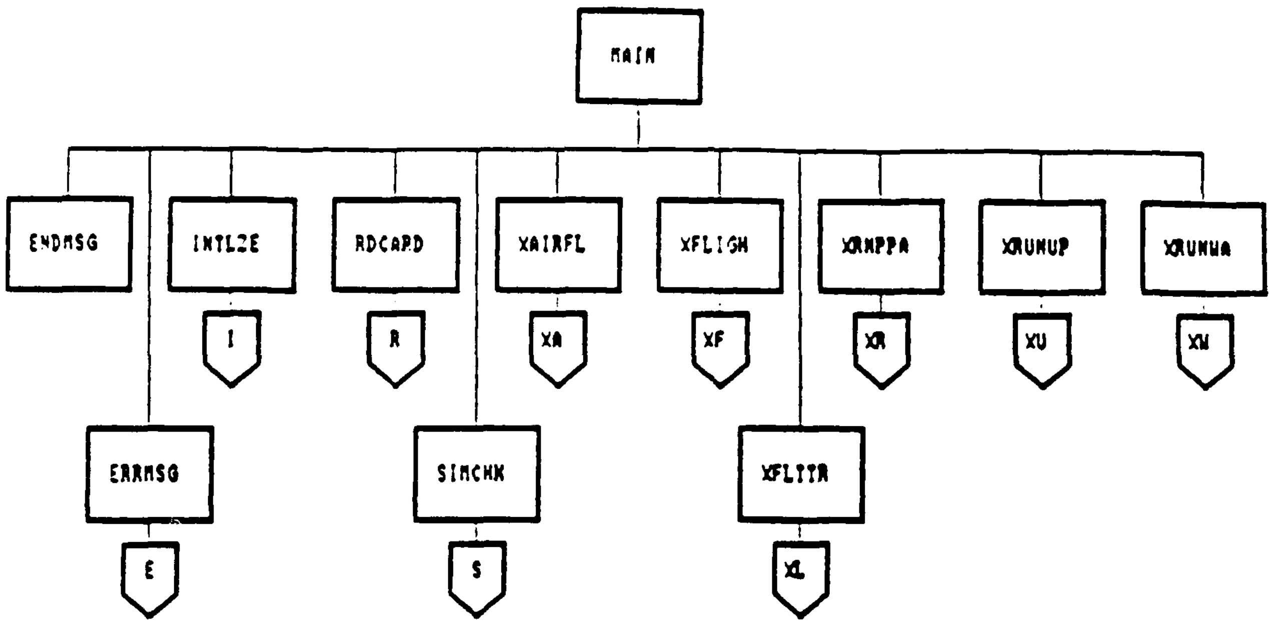

Figure 1. Main Program Procedure Call Reference

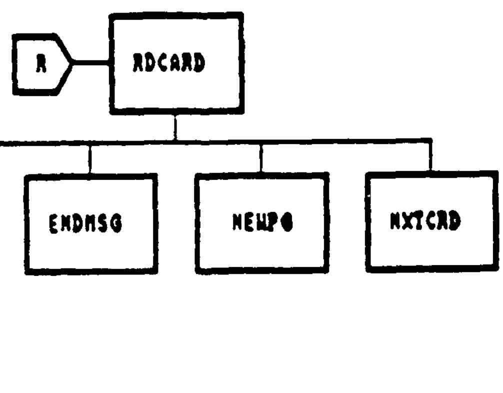

Figure 2. Subroutine RDCARD Procedure Call Reference

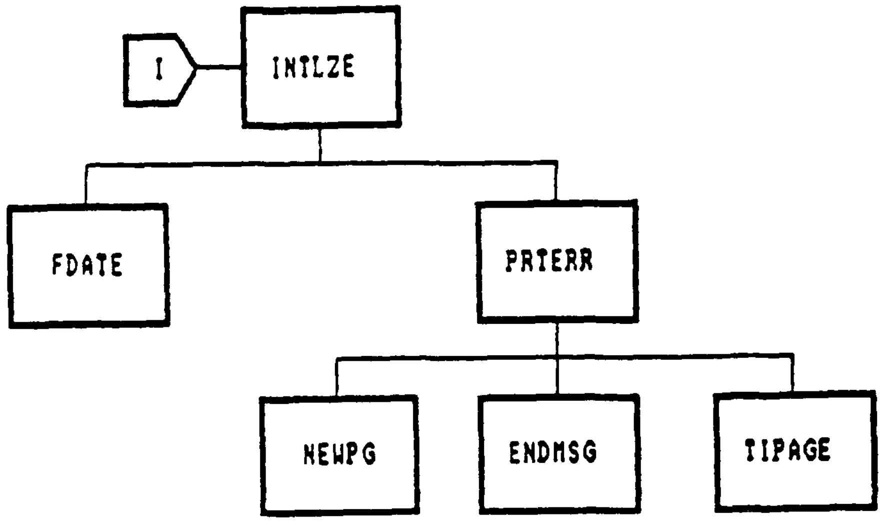

Figure 3. Subroutine INTLZE Procedure Call Reference

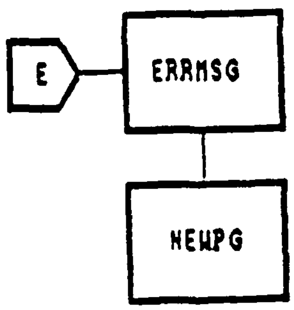

Figure 4. Subroutine ERRMSG Procedure Call Reference

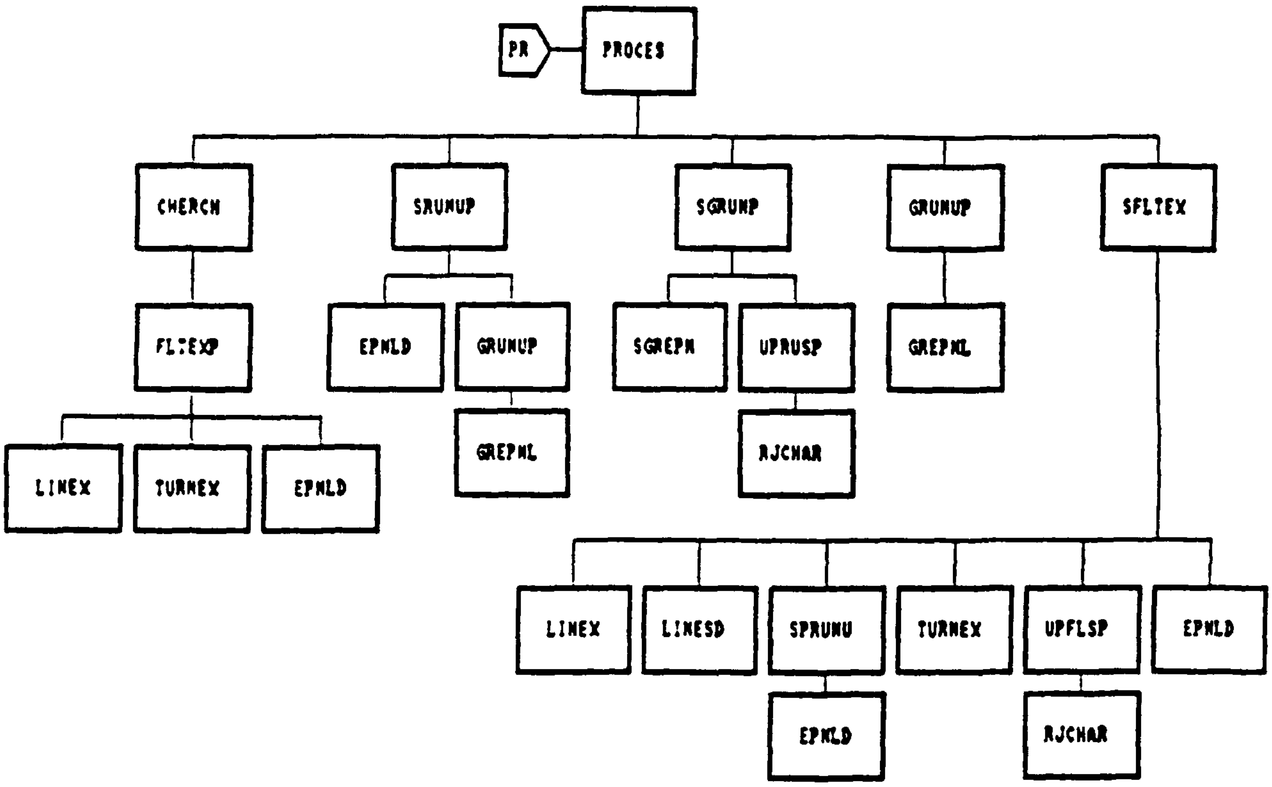

Figure 5. Subroutine PROCES Procedure Call Reference

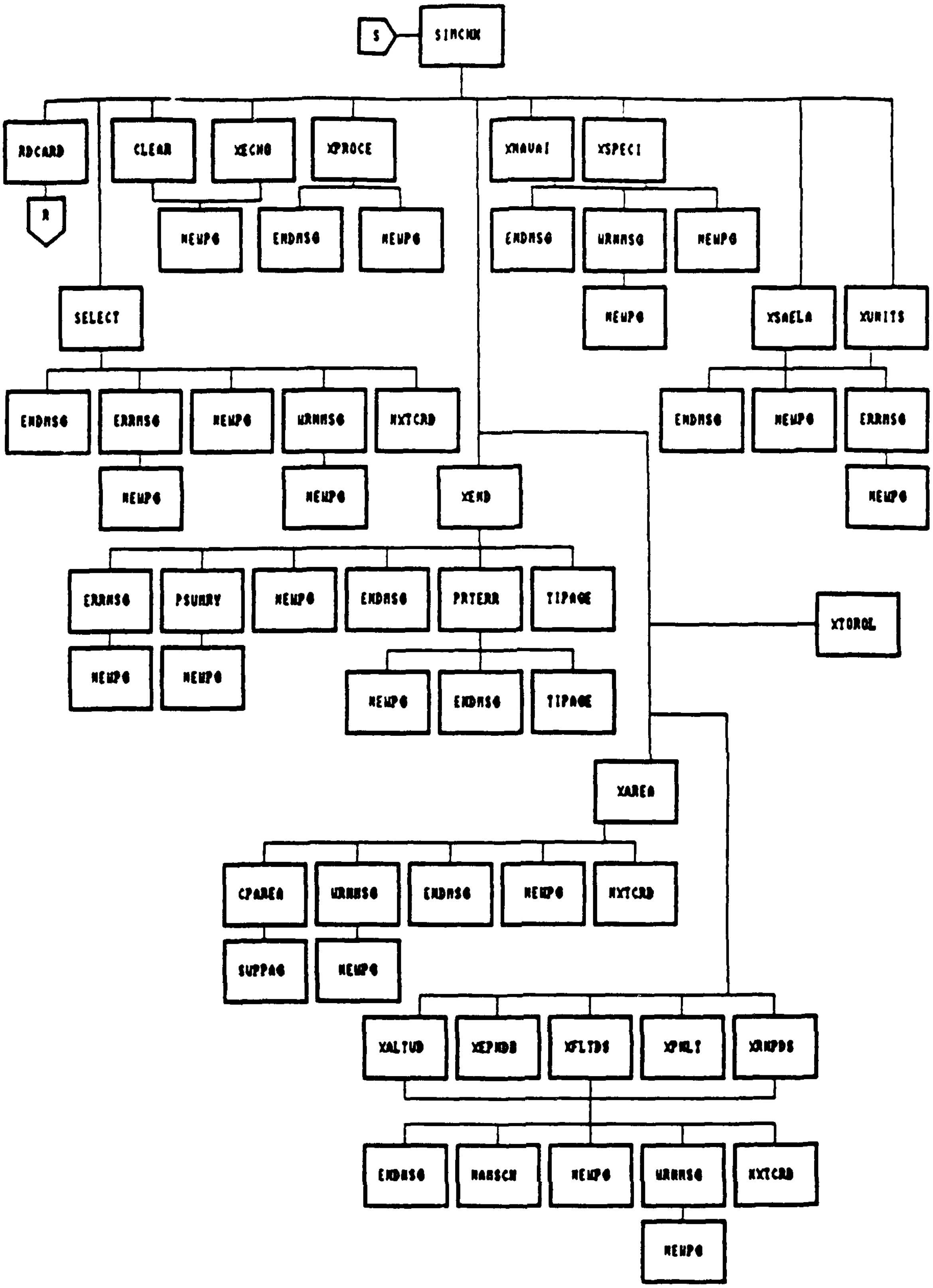

Figure 6. Subroutine SIMCHK Procedure Call Reference

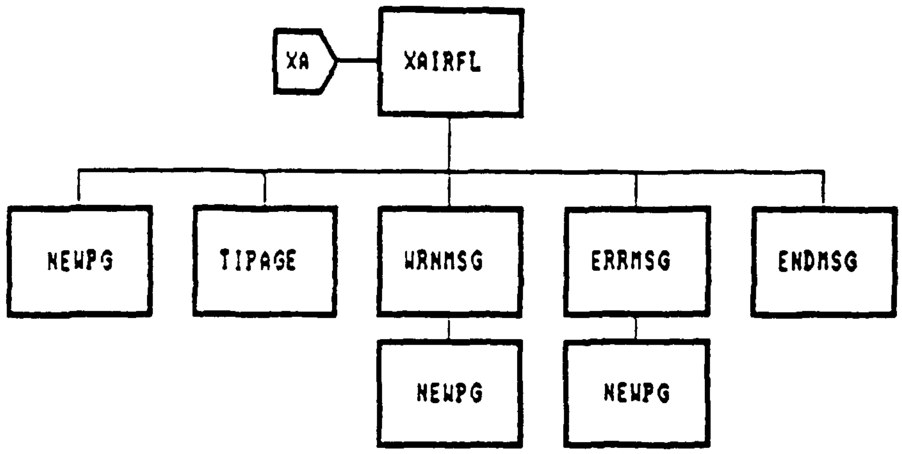

Figure 7. Subroutine XAIRFL Procedure Call Reference

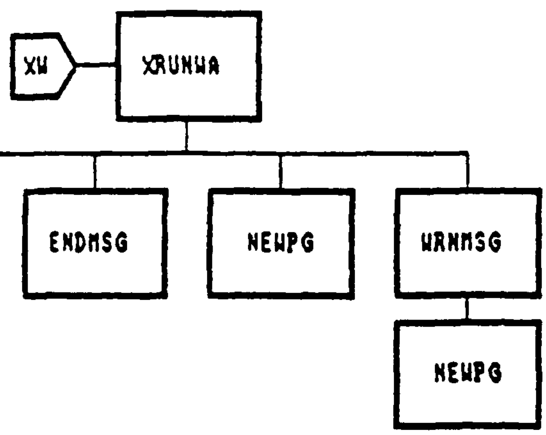

Figure 8. Subroutine XRUNWA Procedure Call Reference

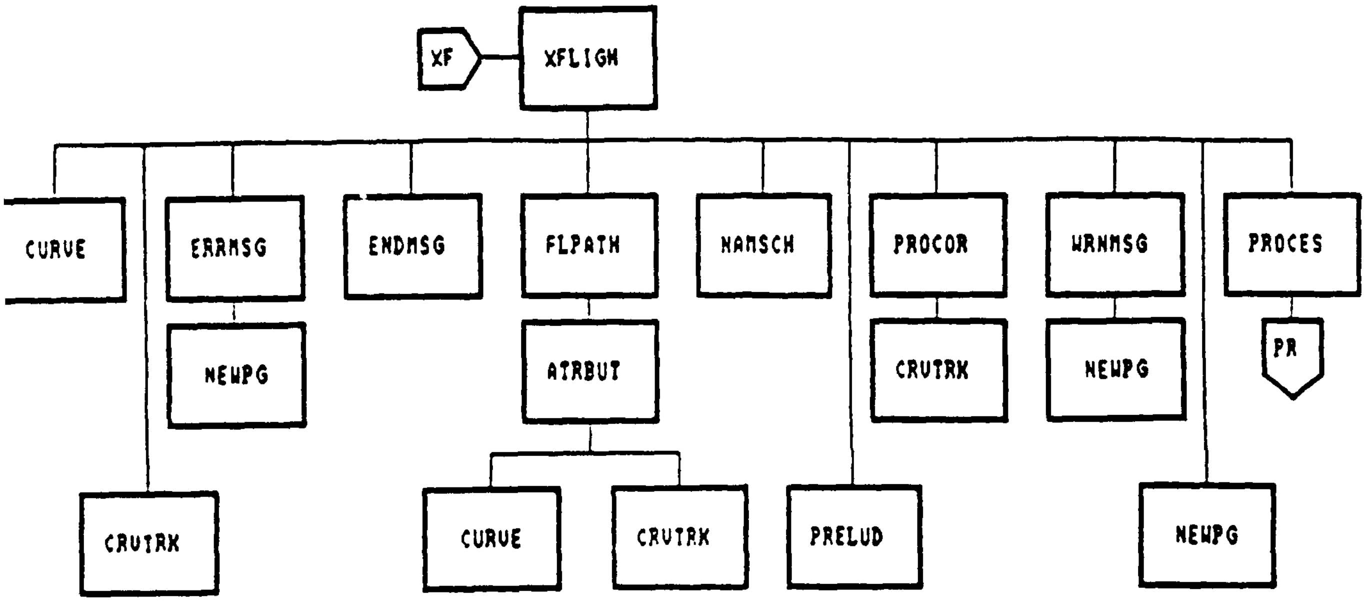

Figure 9. Subroutine XFLIGH Procedure Call Reference

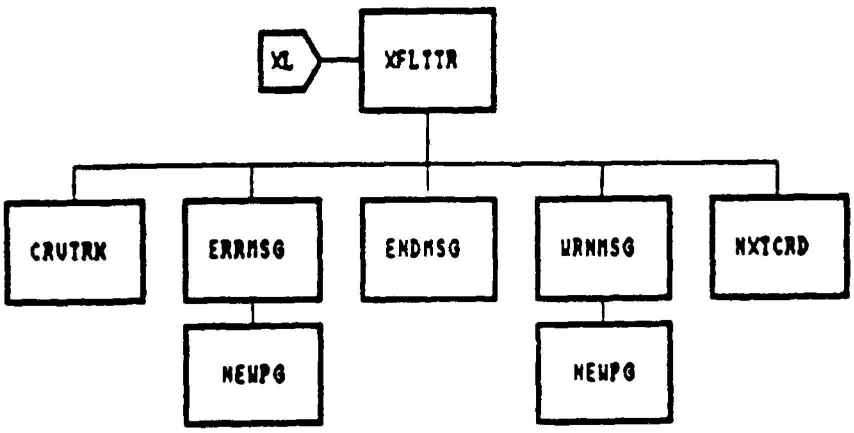

Figure 10. Subroutine XFLTTR Procedure Call Reference

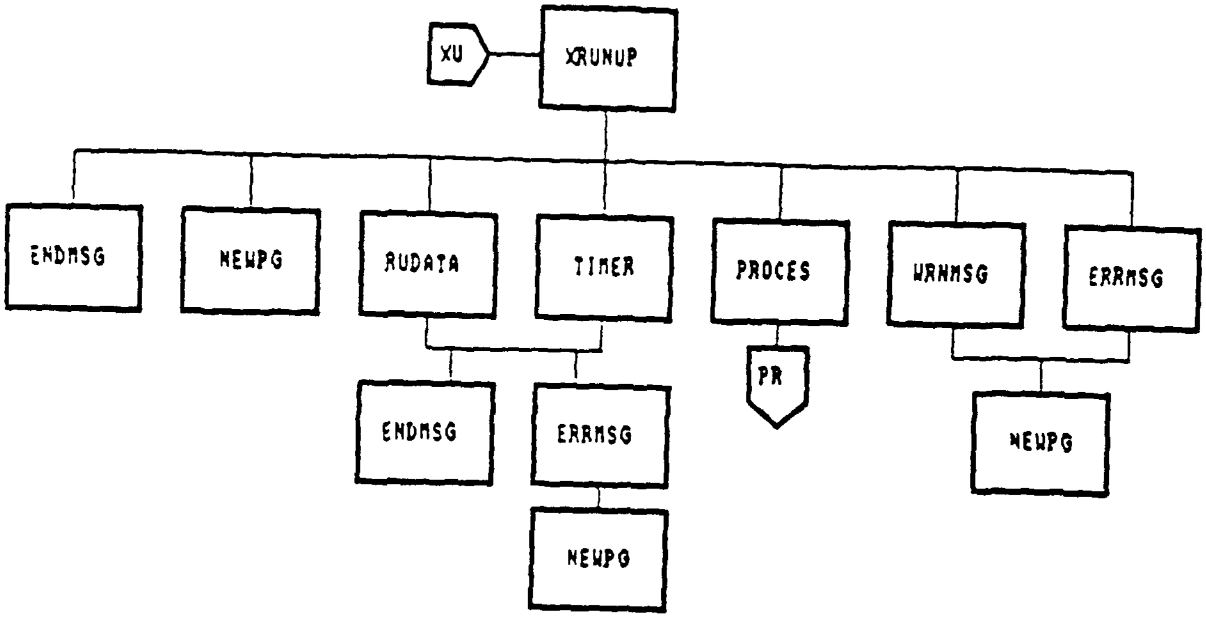

Figure 11. Subroutine XRUNUP Procedure Call Reference

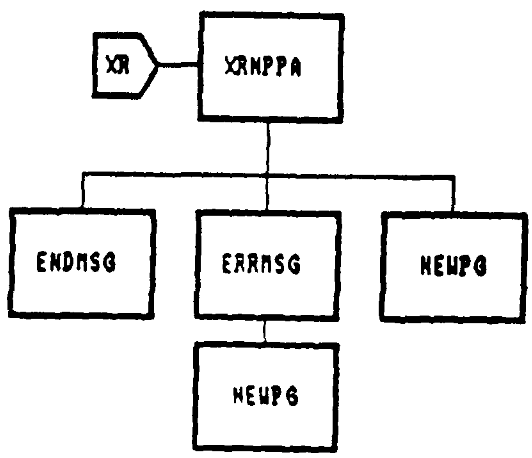

Figure 12. Subroutine XRNPPA Procedure Call Reference

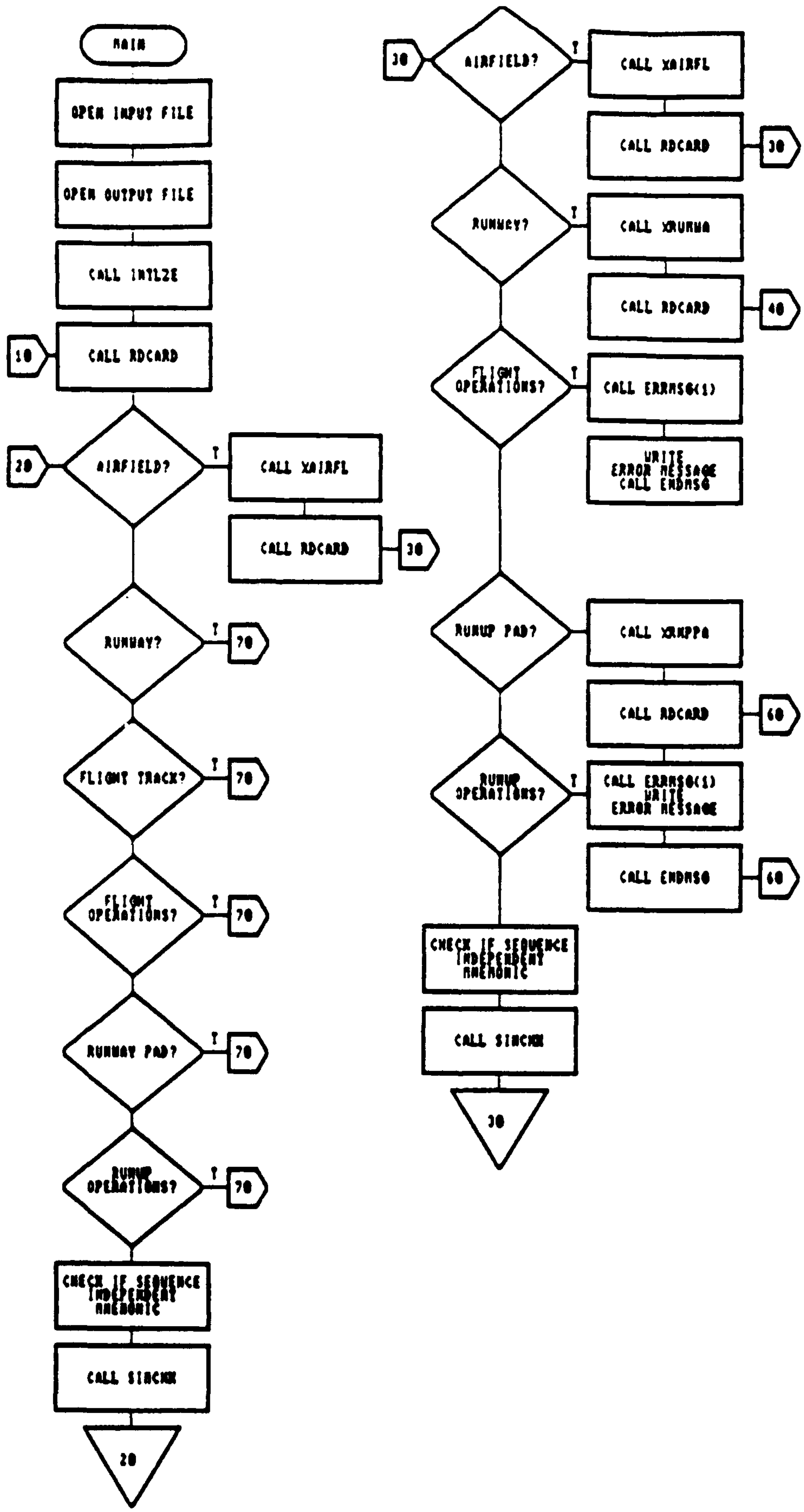

Figure 13. Main Program Flow Diagram

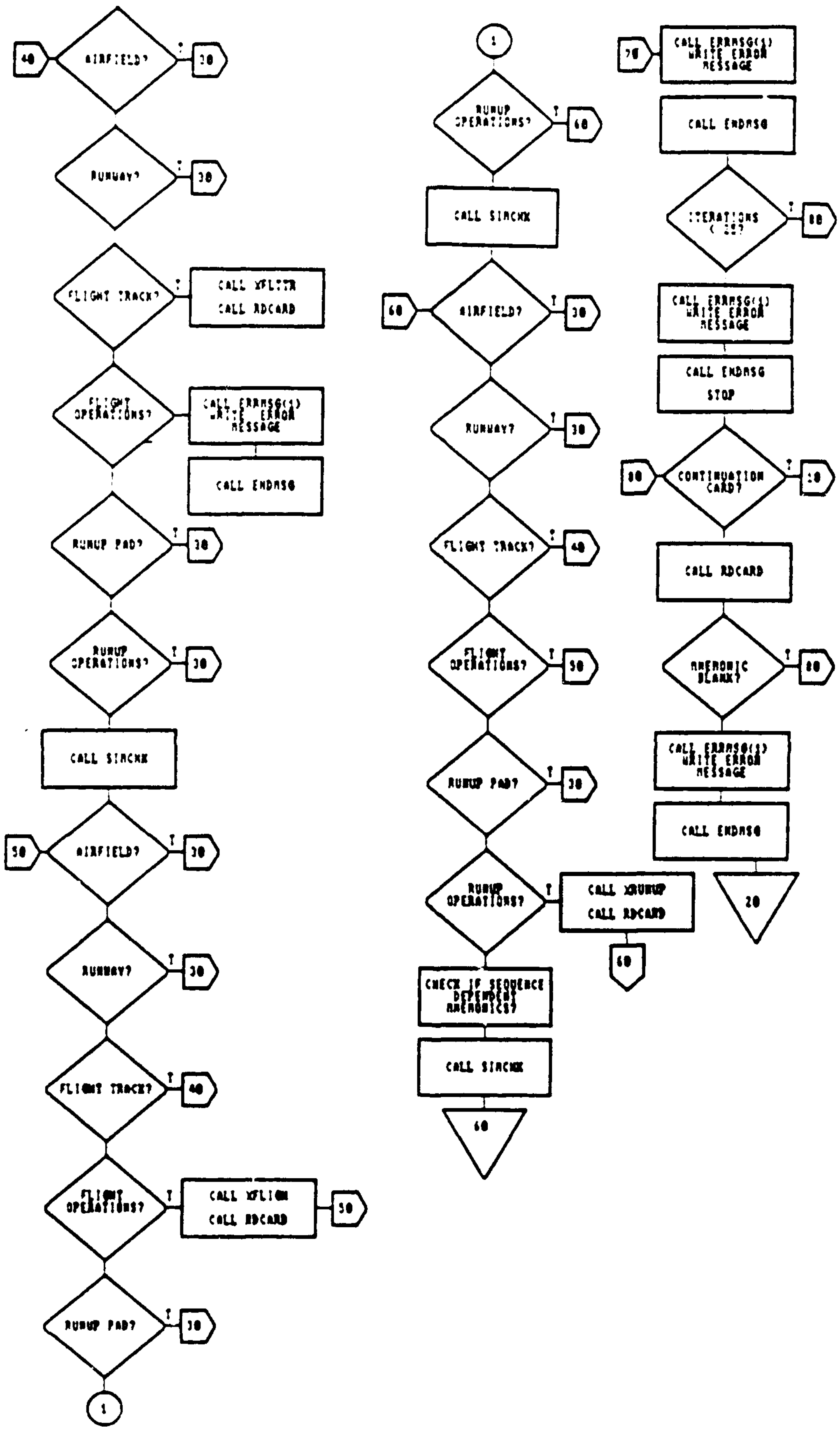

Figure 13-A. Main Program Flow Diagram
(Continued)

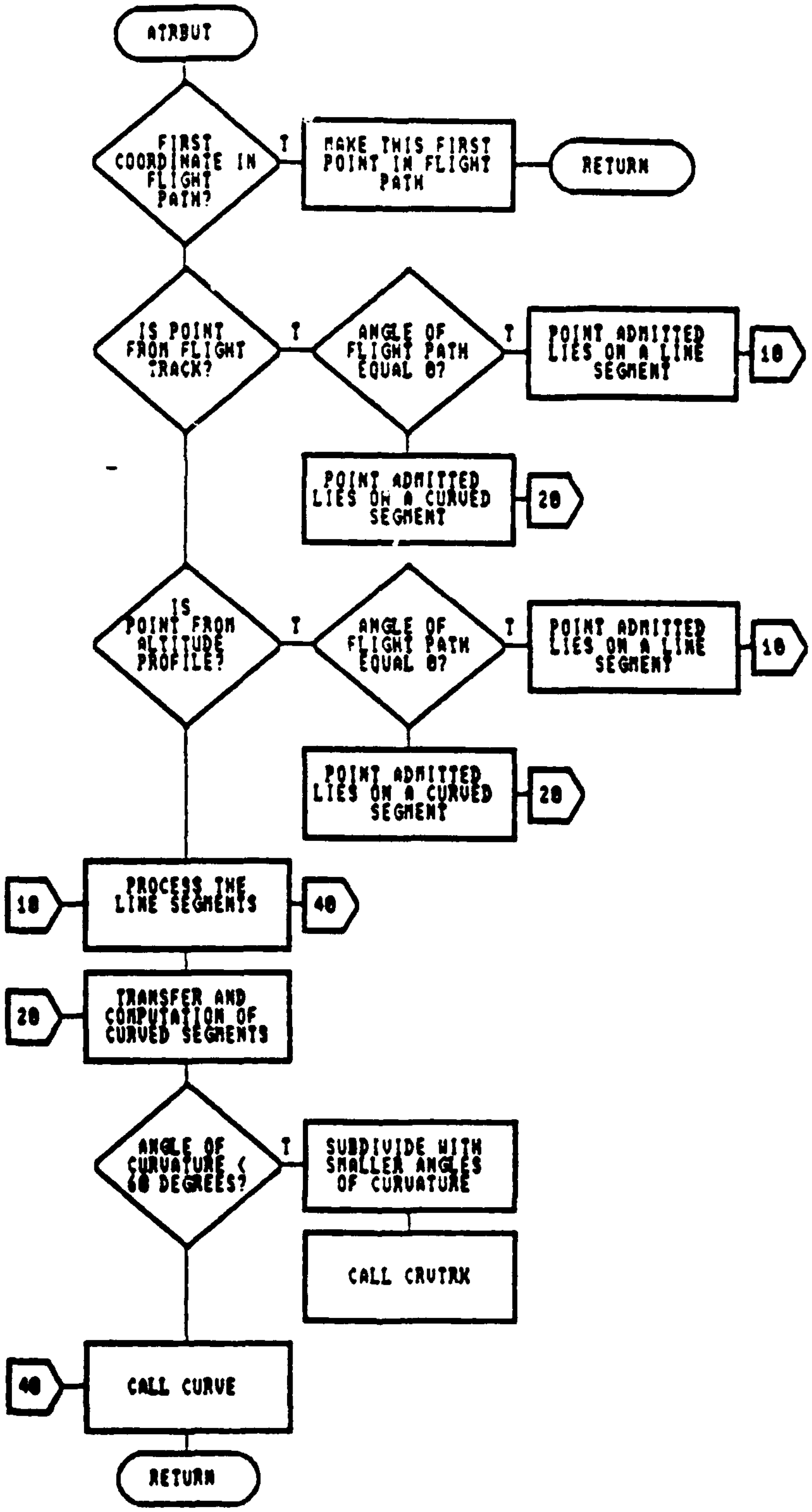

Figure 14. SubProgram ATRBUT Flow Diagram

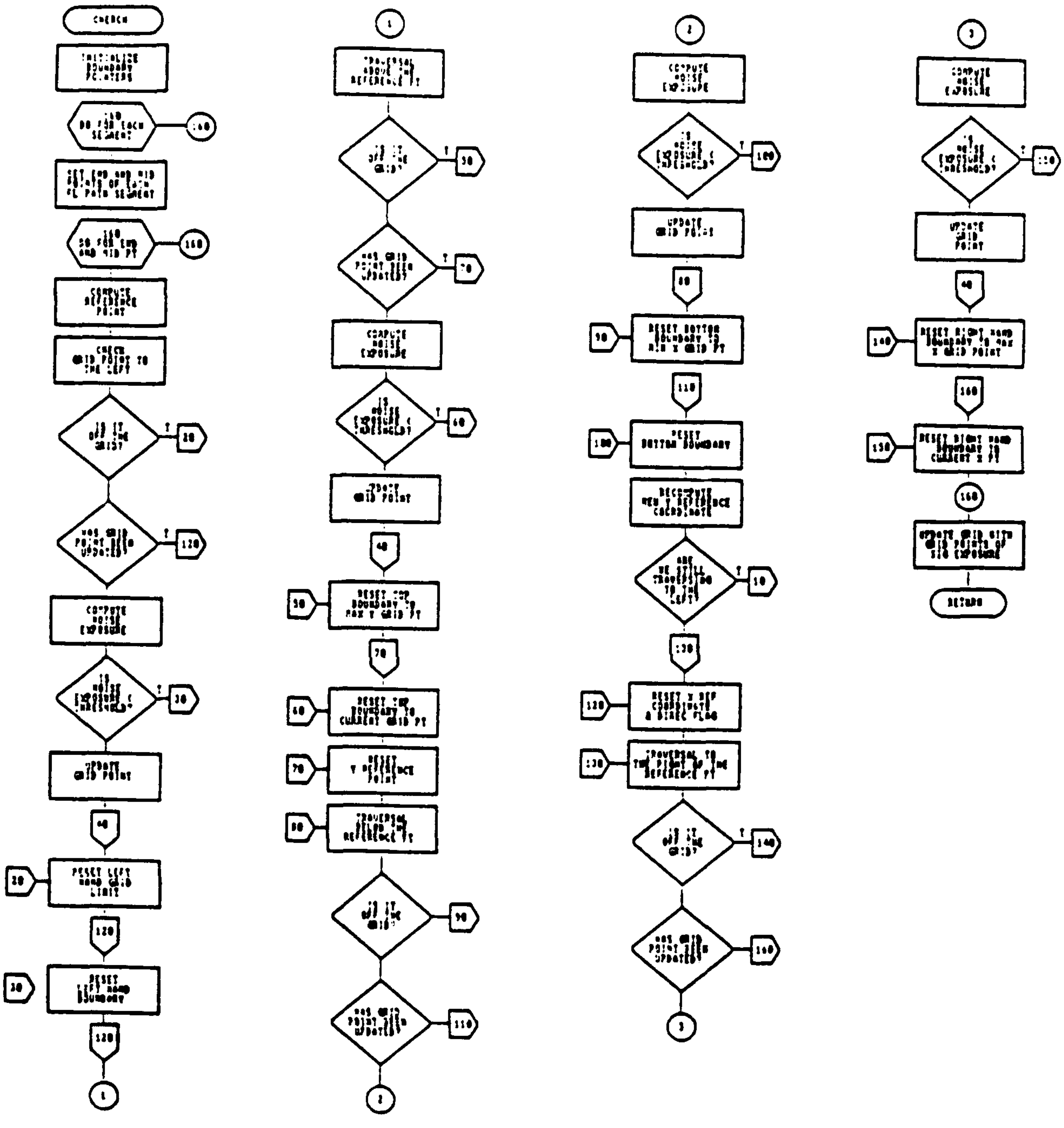

Figure 15. SubProgram CHERCH Flow Diagram

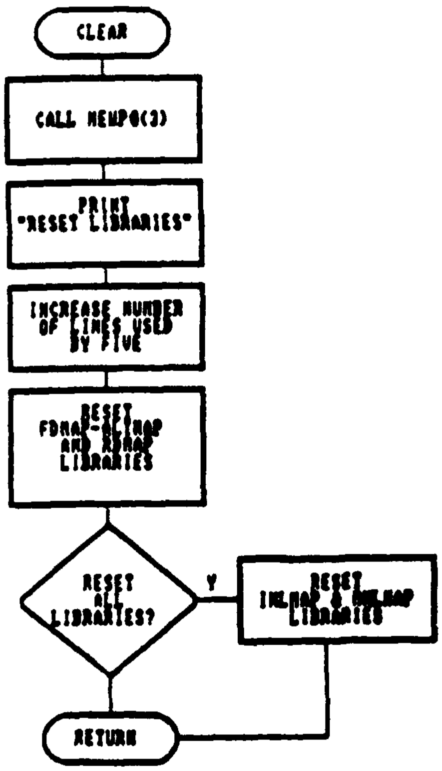

Figure 16. SubProgram CLEAR Flow Diagram

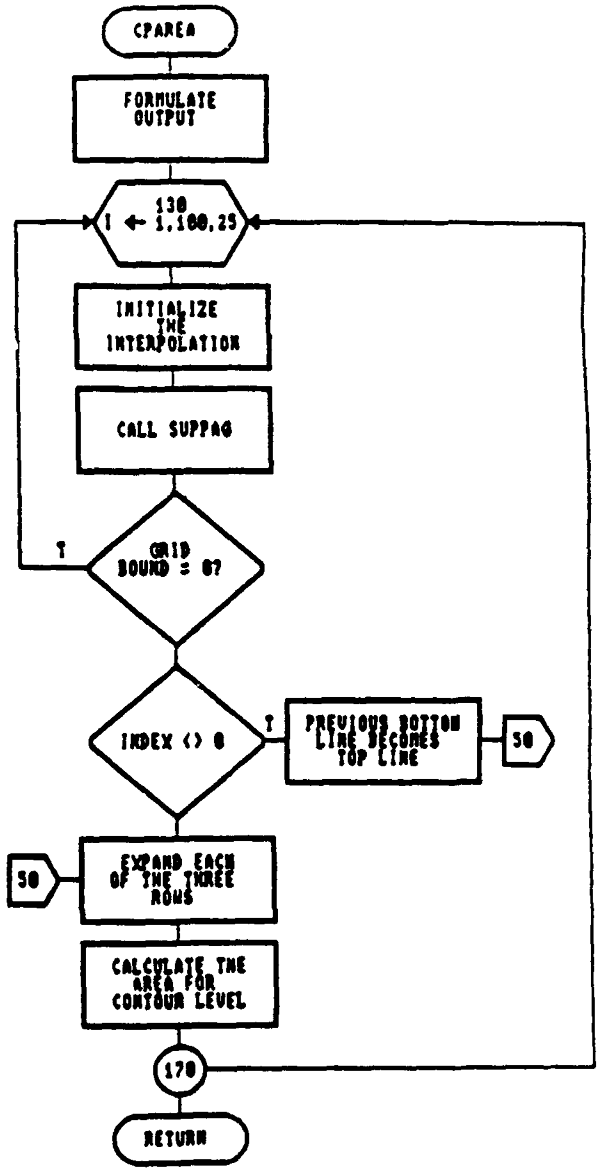

Figure 17. SubProgram CPAREA Flow Diagram

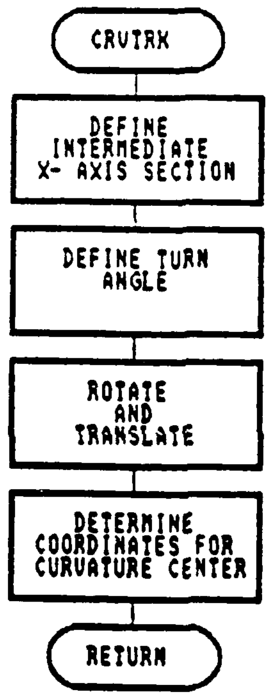

Figure 18. SubProgram CRVTRK Flow Diagram

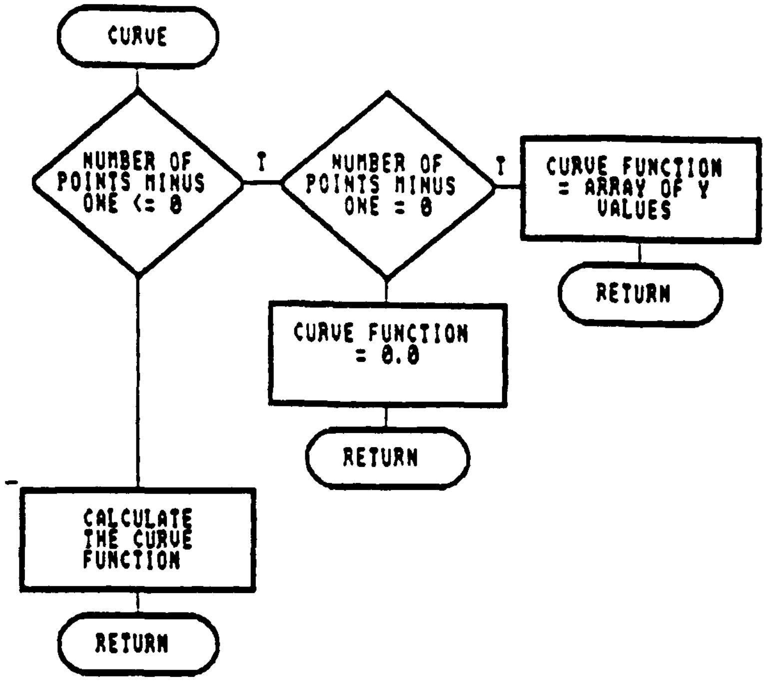

Figure 19. SubProgram CURVE Flow Diagram

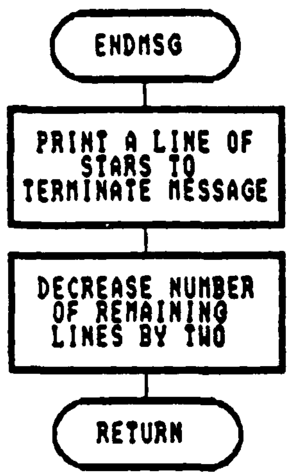

Figure 20. SubProgram ENDMSG Flow Diagram

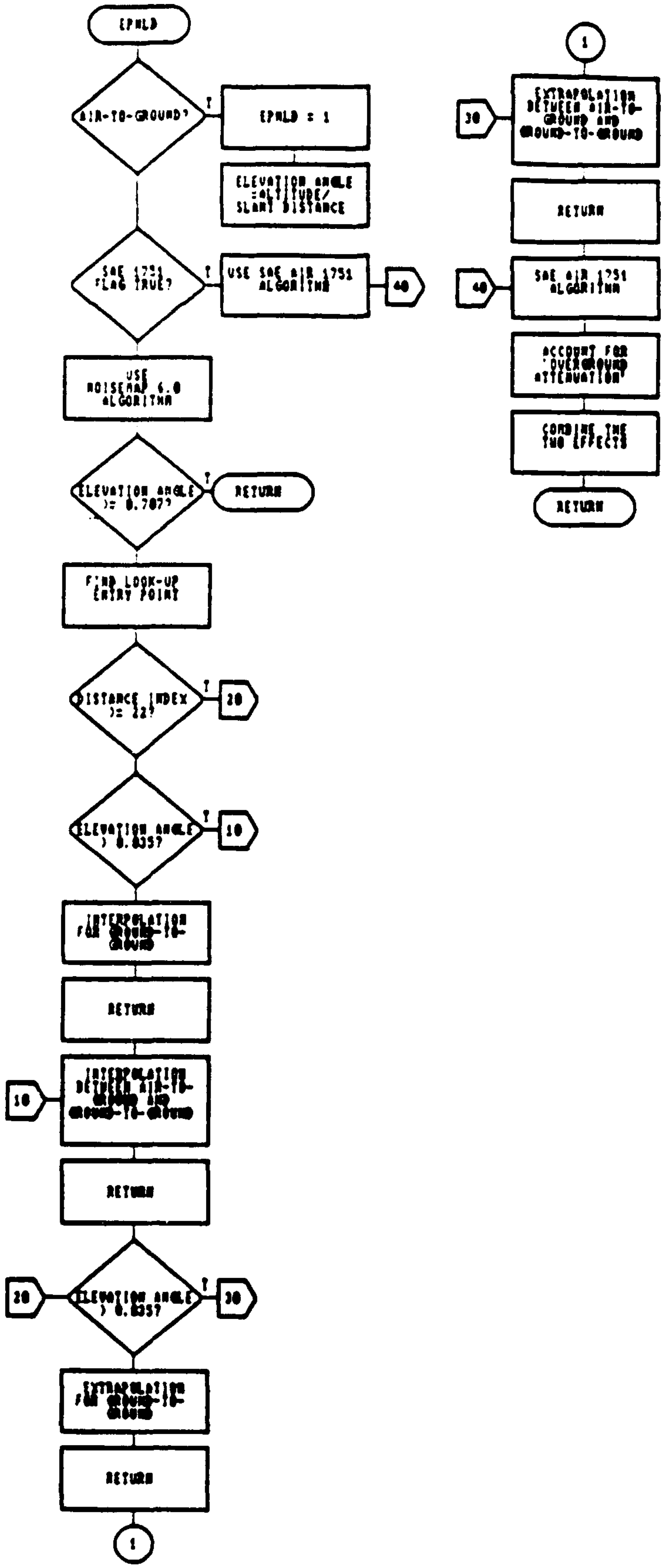

Figure 21. SubProgram EPNLD Flow Diagram

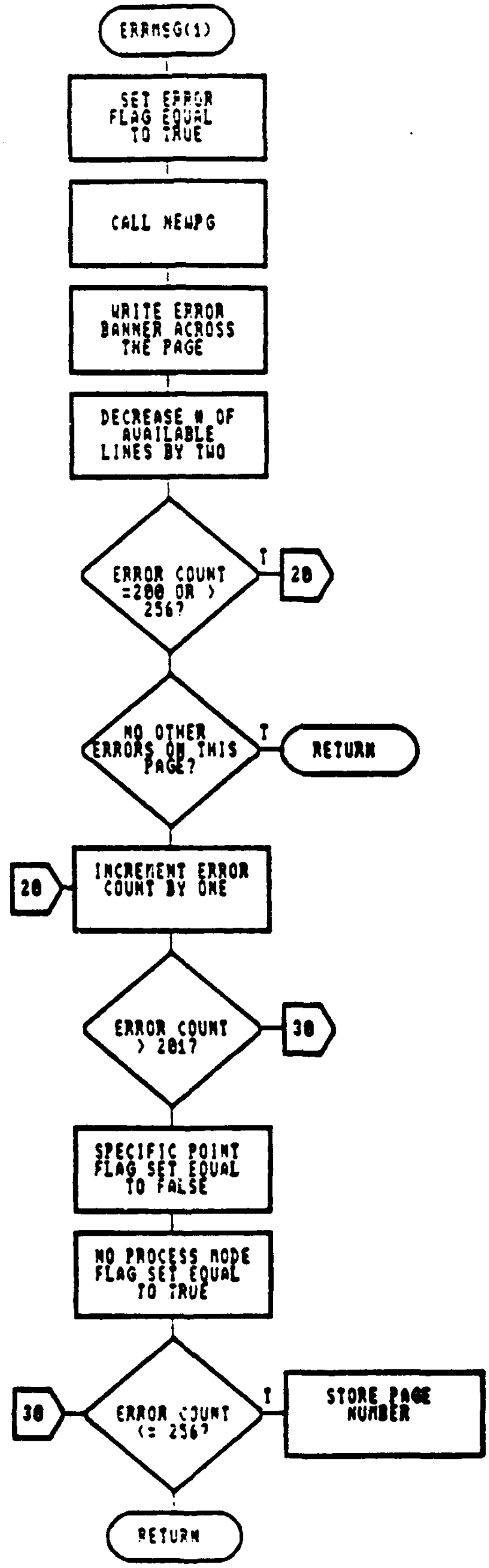

Figure 22. SubProgram ERRMSG Flow Diagram

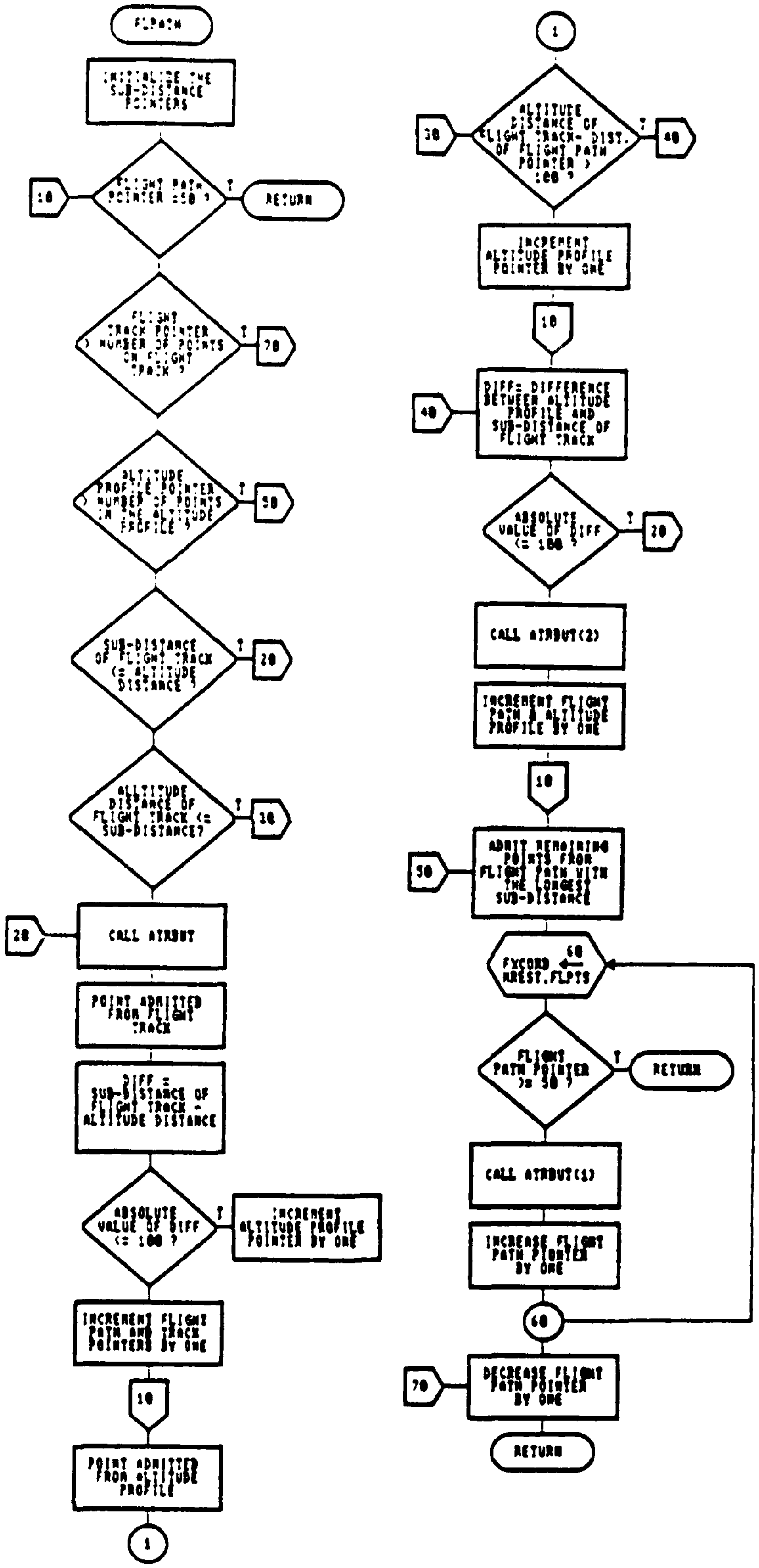

Figure 23. SubProgram FLPATH Flow Diagram

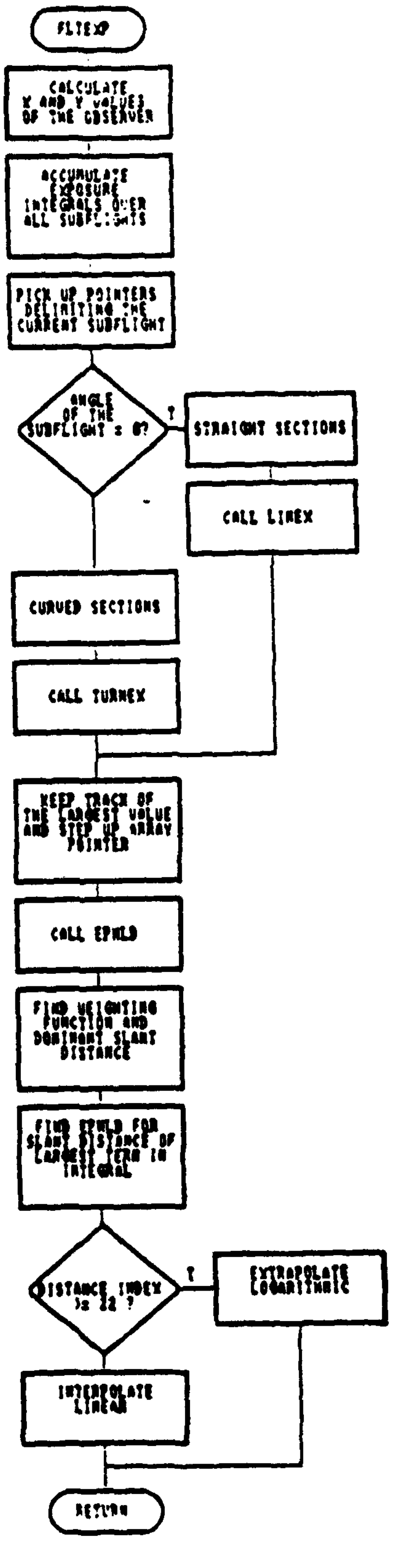

Figure 24. SubProgram FLTEXP Flow Diagram

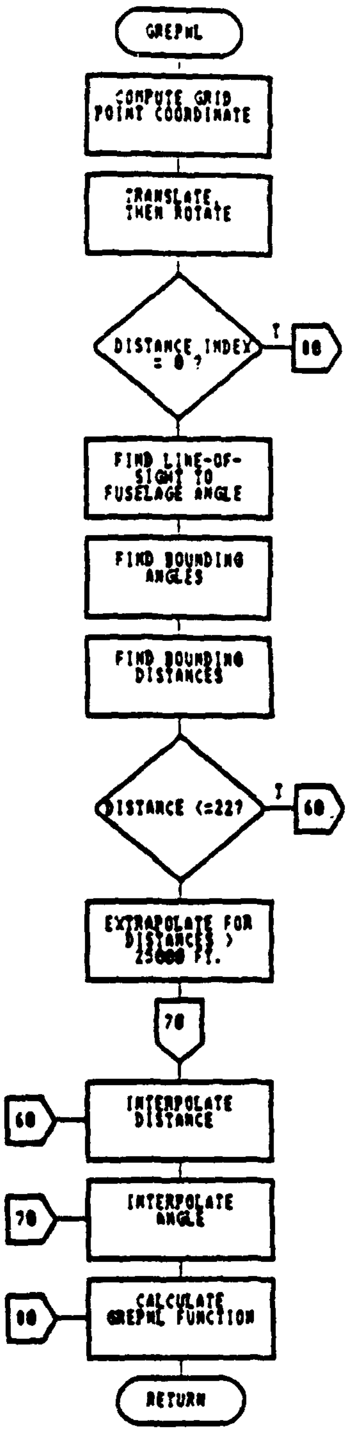

Figure 25. SubProgram GREPNL Flow Diagram

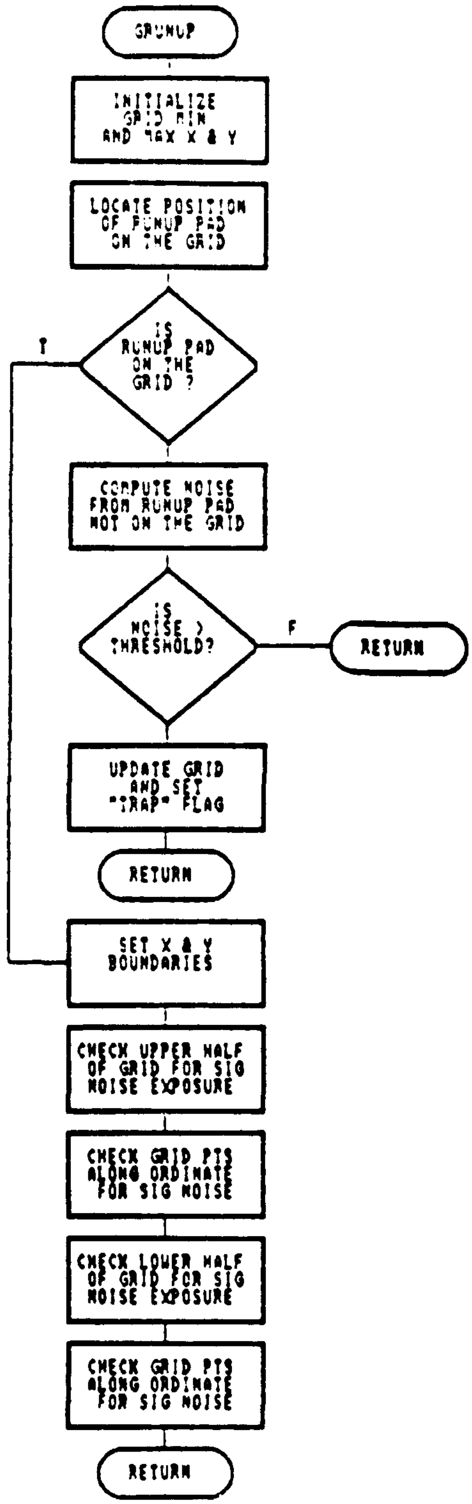

Figure 26. SubProgram GRUNUP Flow Diagram

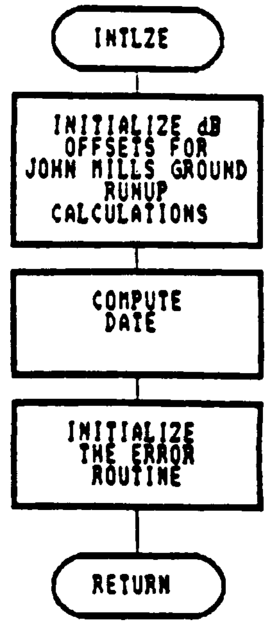

Figure 27. SubProgram INTLZE Flow Diagram

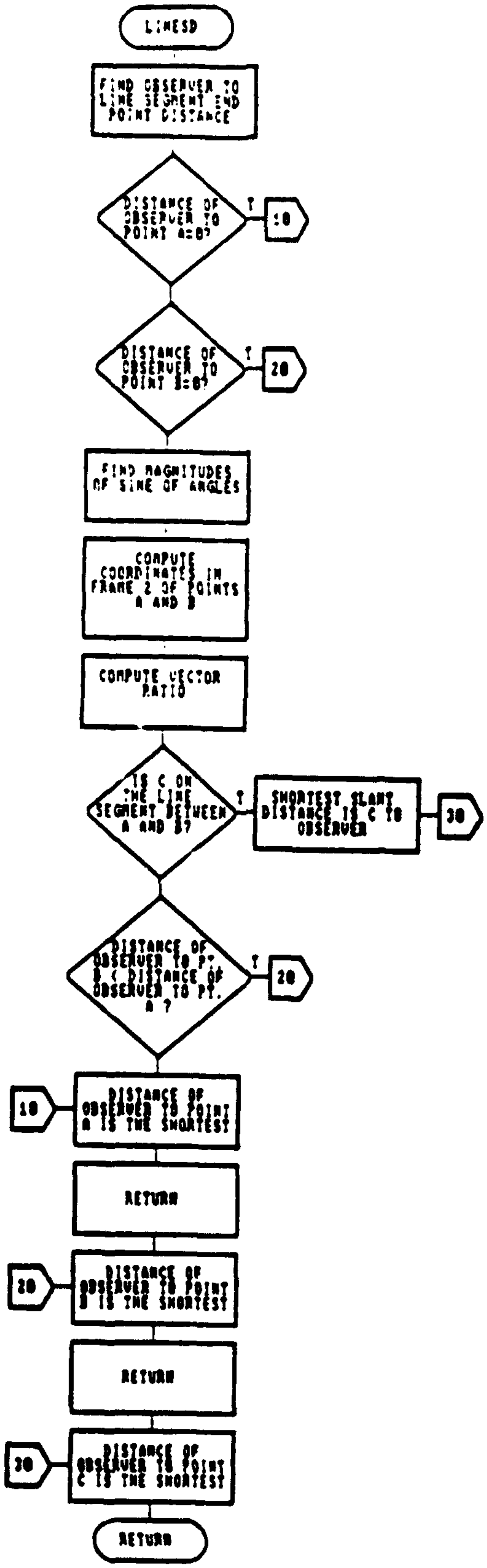

Figure 28. SubProgram LINESD Flow Diagram

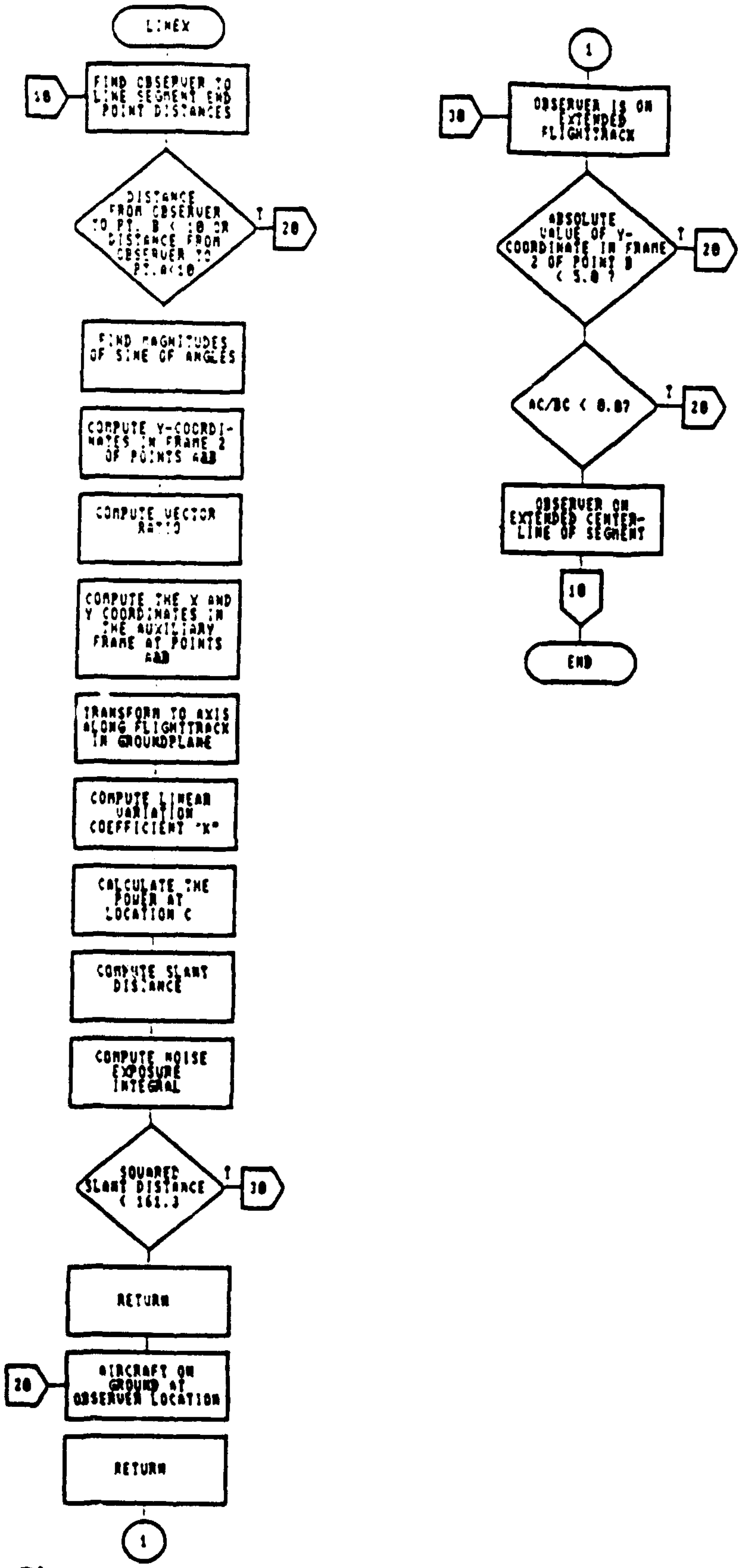

Figure 29. SubProgram LINEX Flow Diagram

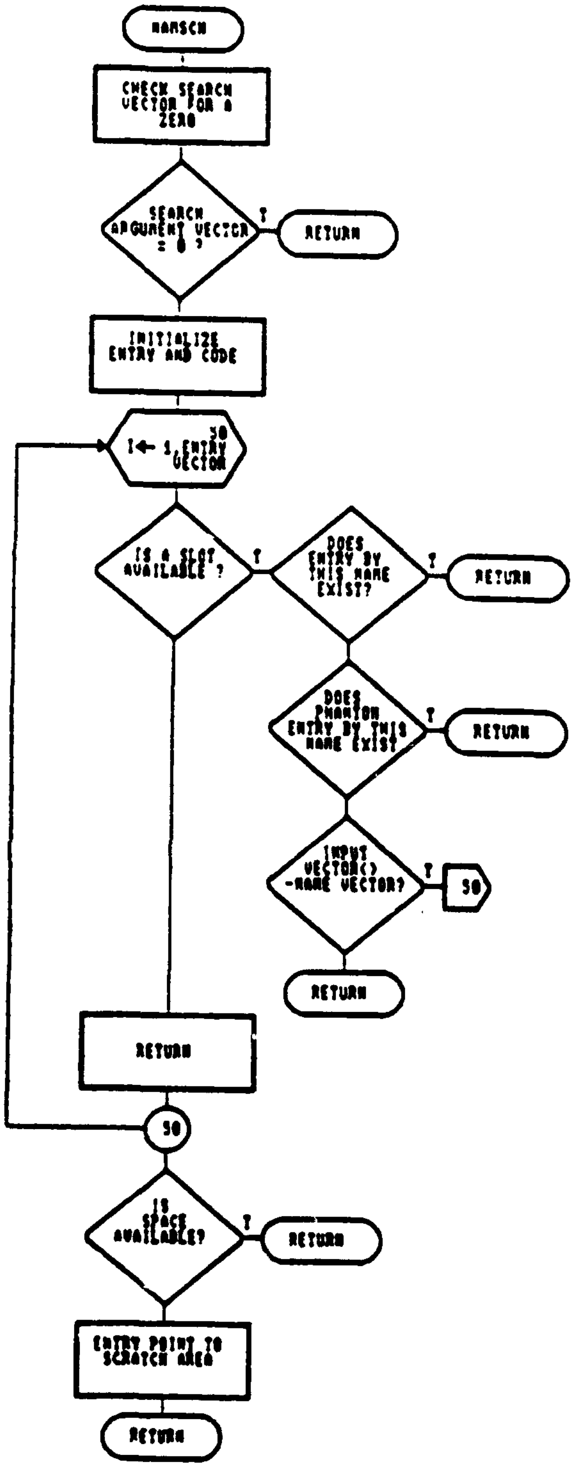

Figure 30. SubProgram NAMSCH Flow Diagram

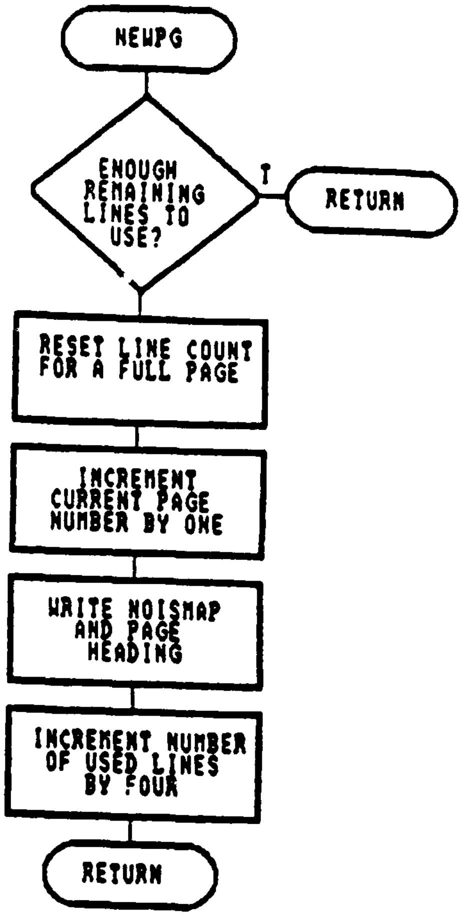

Figure 31. SubProgram NEWPG Flow Diagram

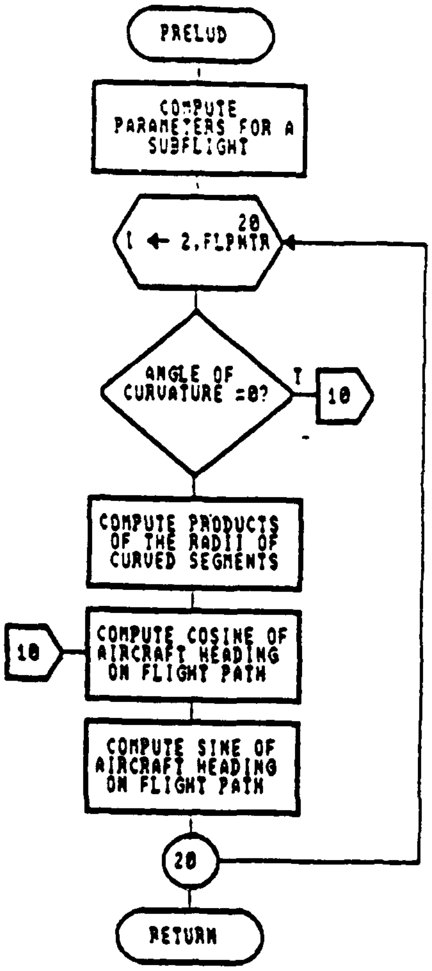

Figure 32. SubProgram PRELUD Flow Diagram

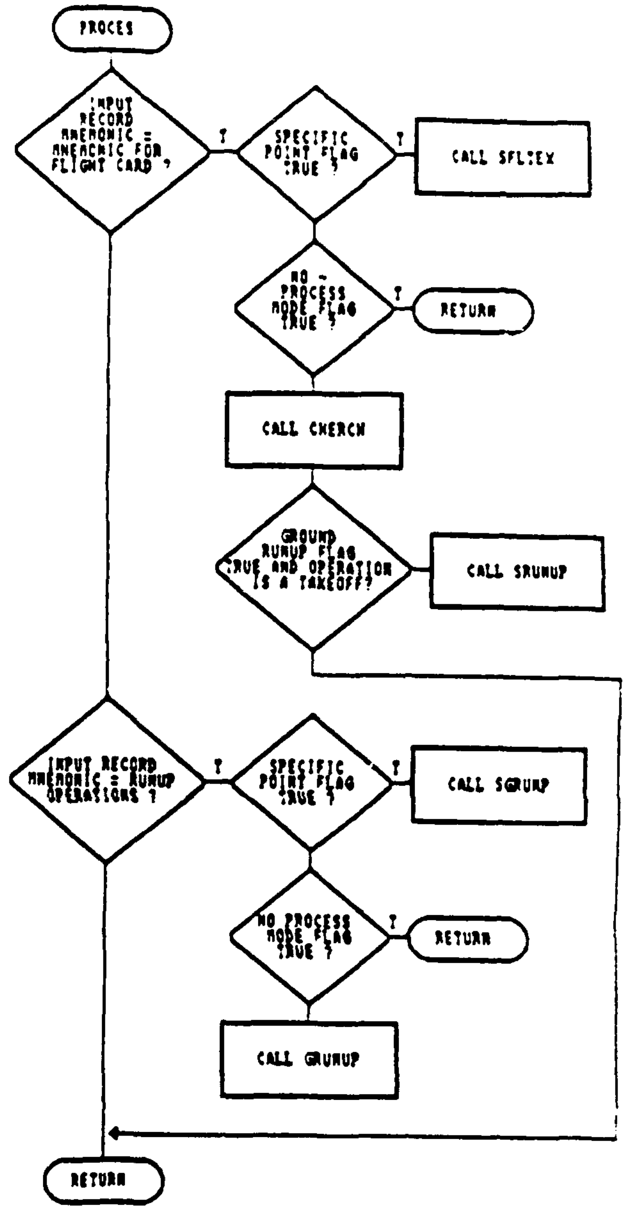

Figure 33. SubProgram PROCES Flow Diagram

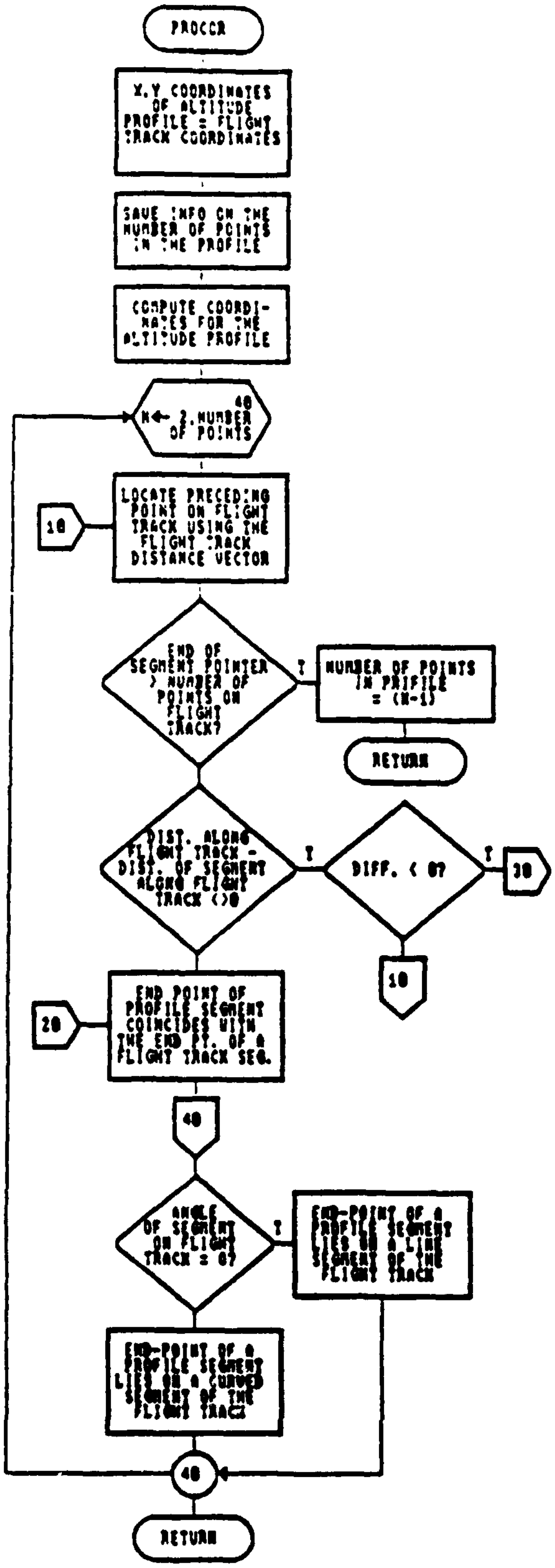

Figure 34. SubProgram PROCOR Flow Diagram

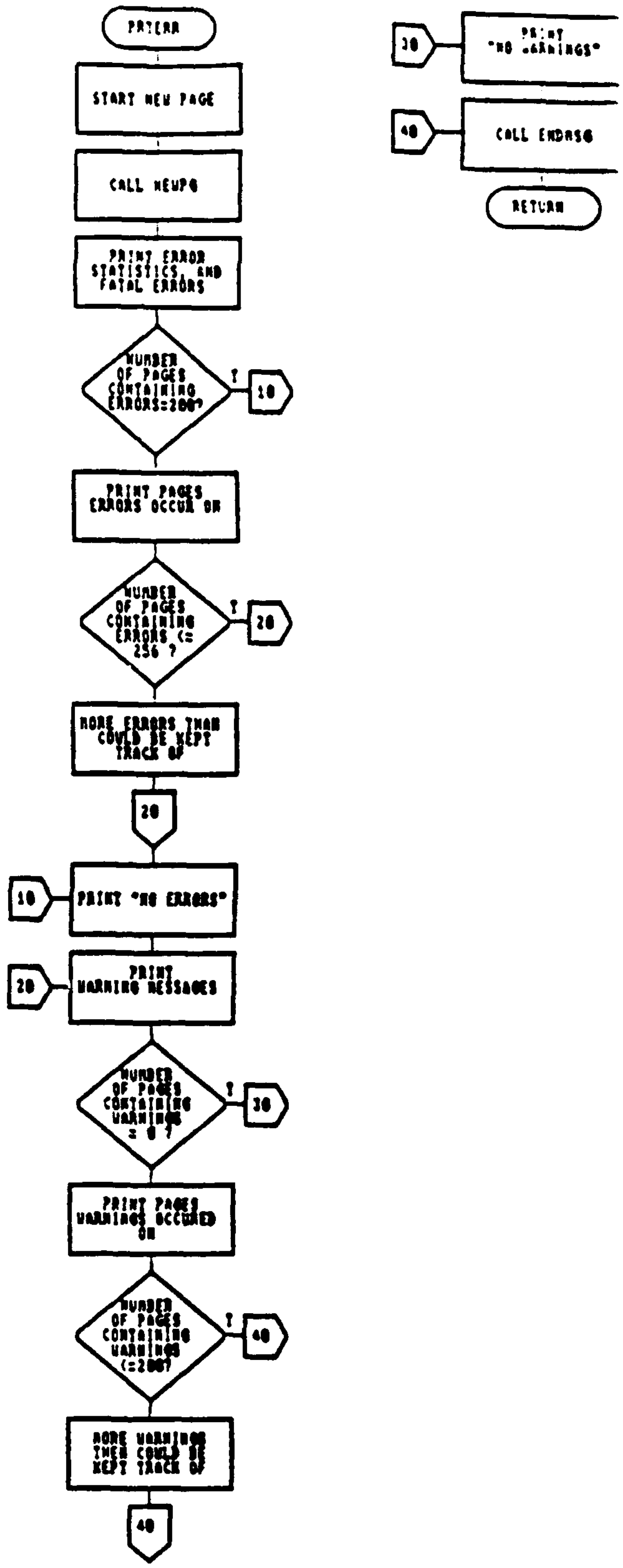

Figure 35. SubProgram PRTERR Flow Diagram

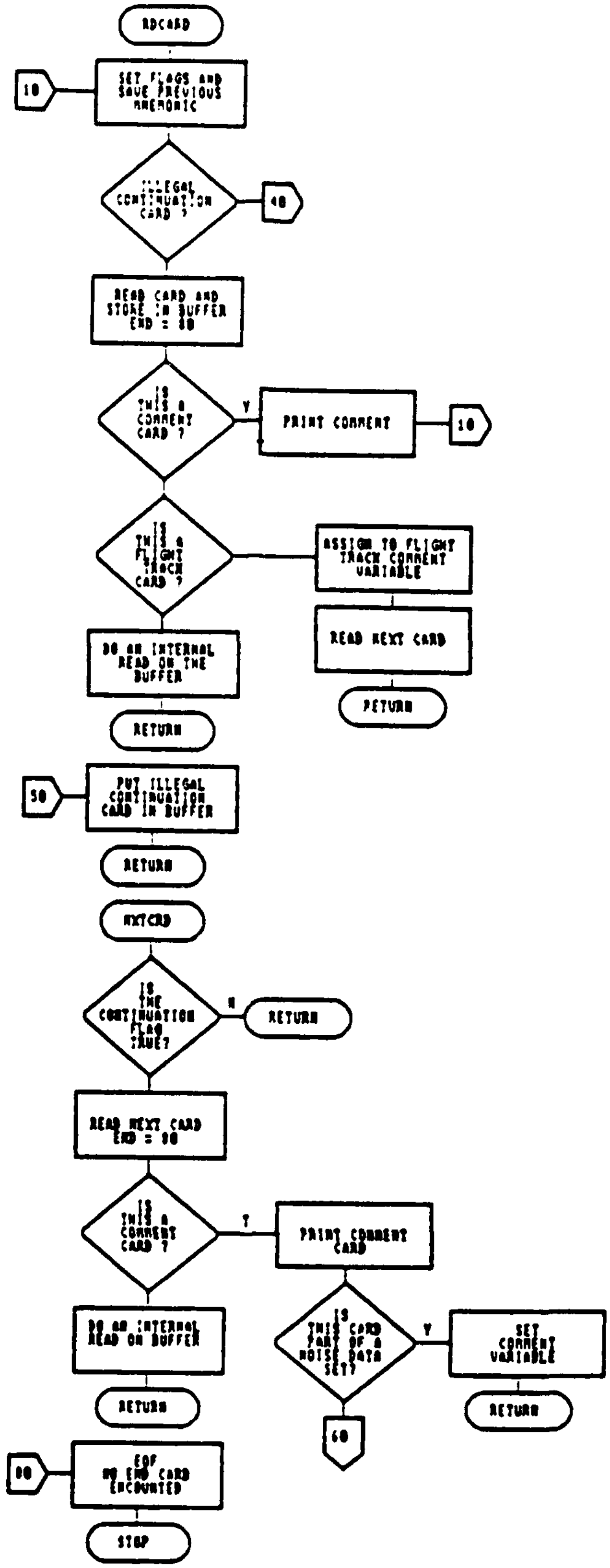

Figure 36. SubProgram RDCARD
Flow Diagram

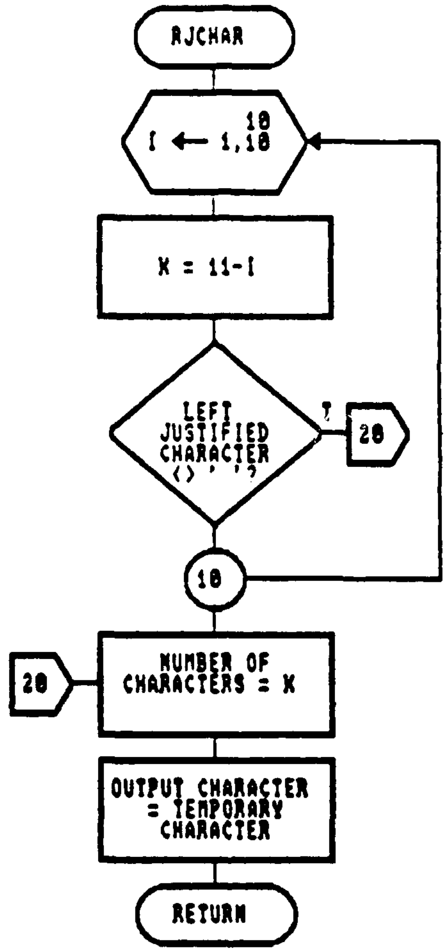

Figure 37. SubProgram RJCHAR Flow Diagram

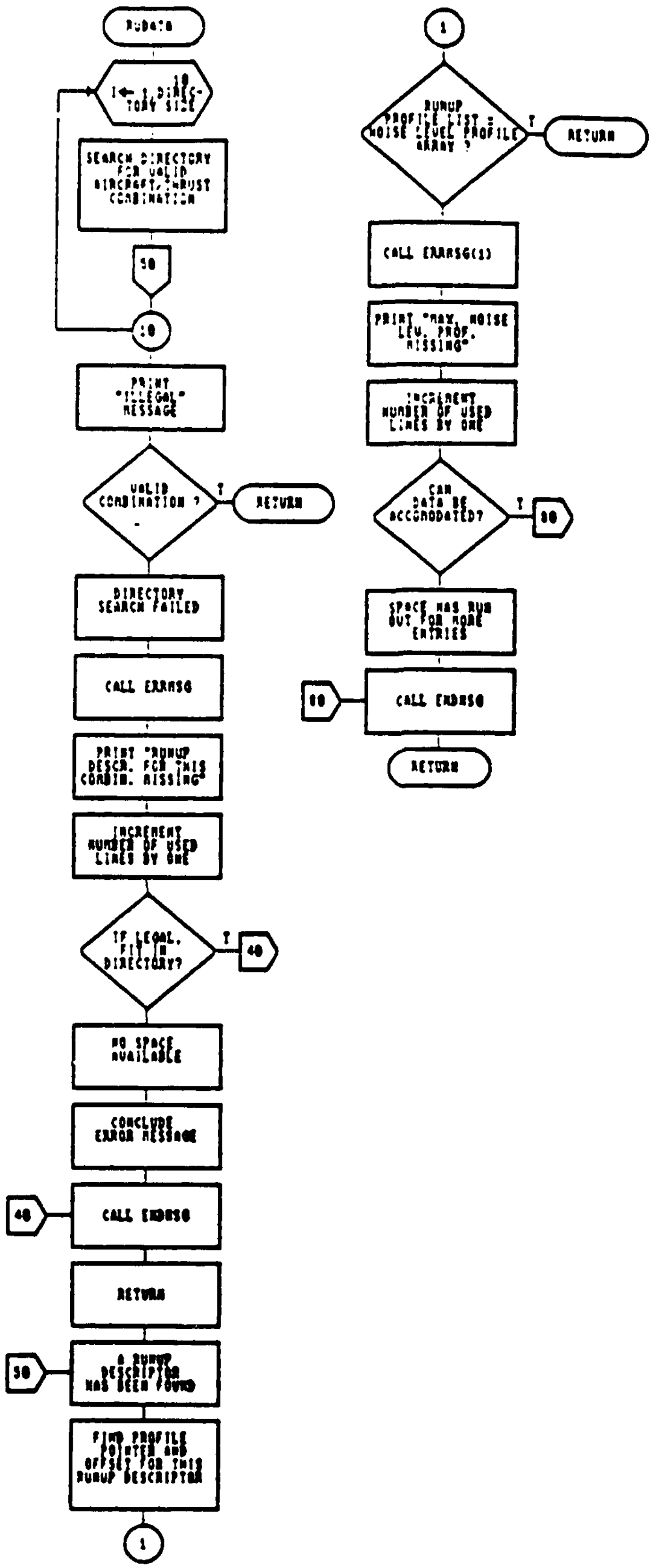

Figure 38. SubProgram RUDATA Flow Diagram

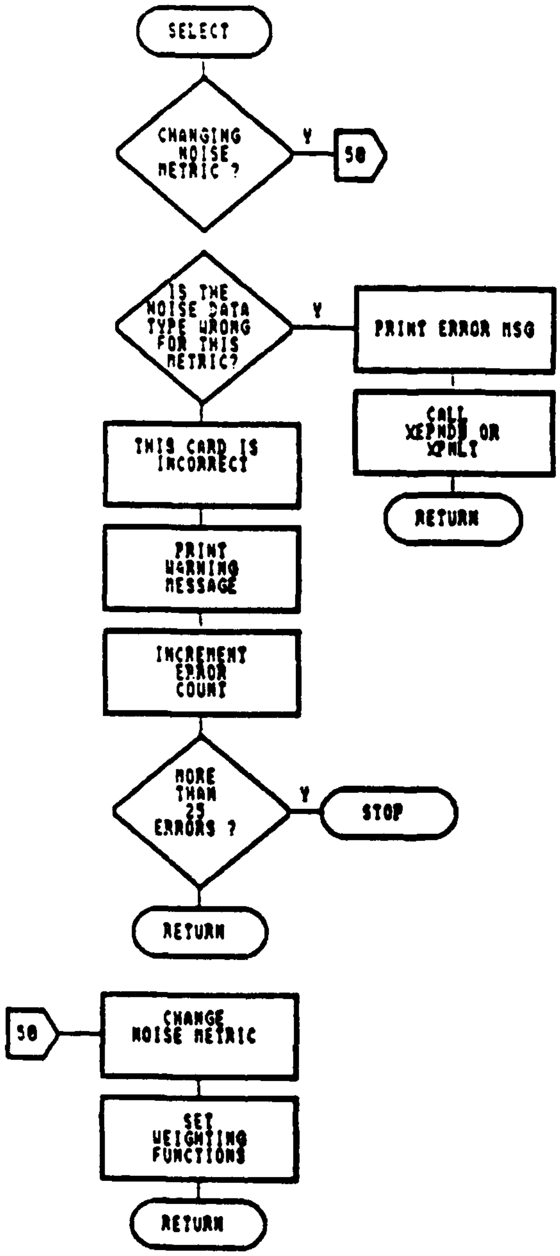

Figure 39. SubProgram SELECT Flow Diagram

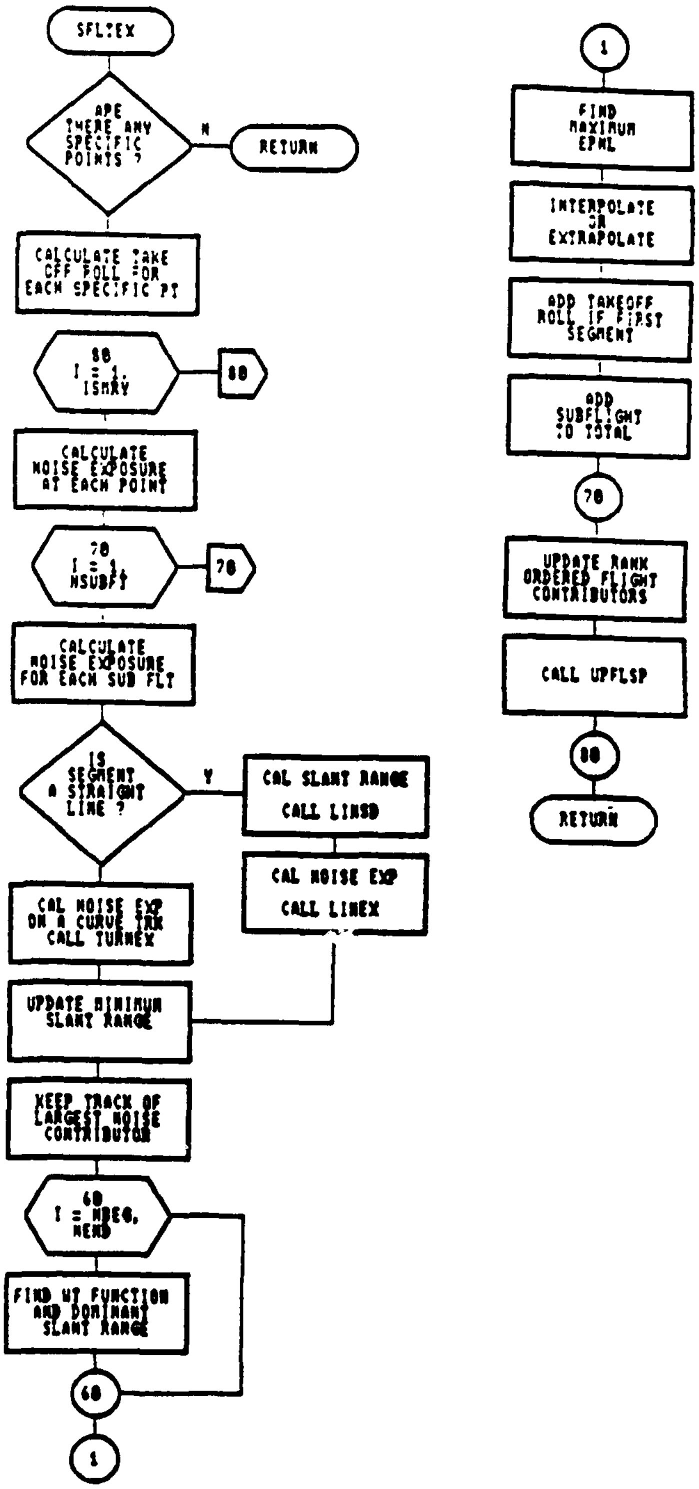

Figure 40. SubProgram SFLTEX Flow Diagram

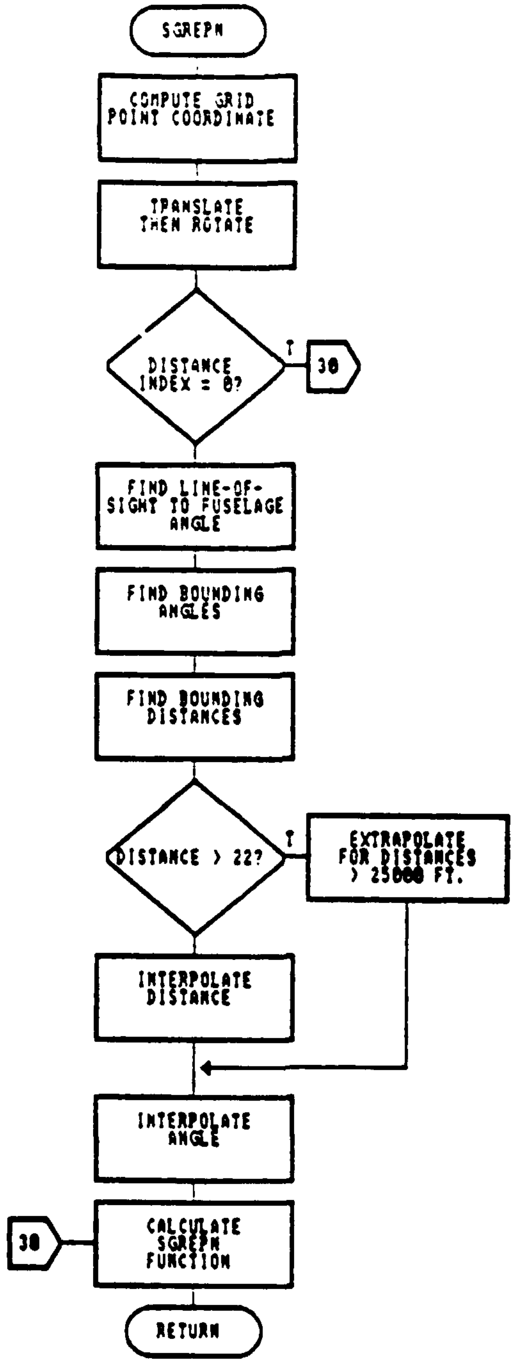

Figure 41. SubProgram SGREPN Flow Diagram

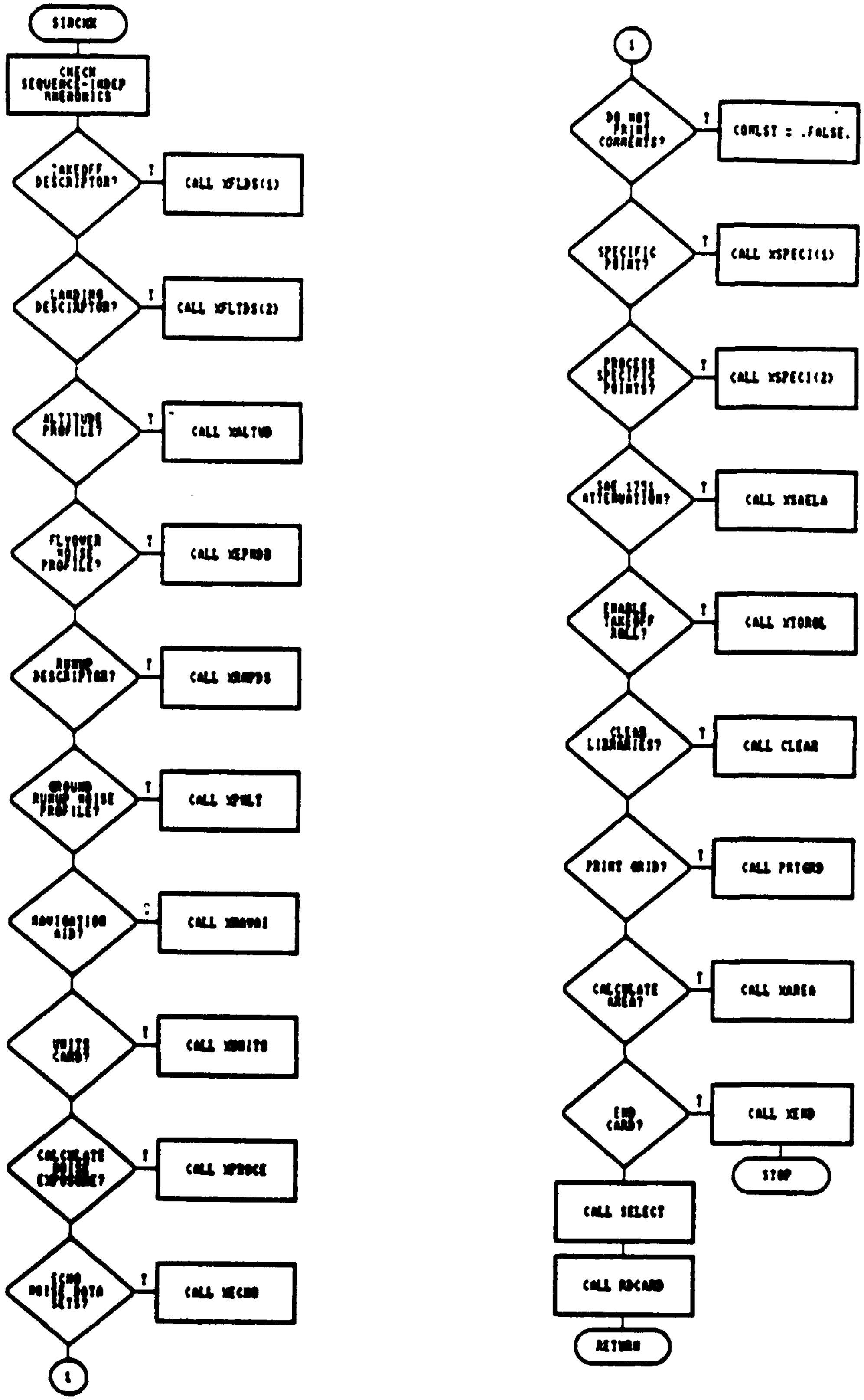

Figure 42. SubProgram SIMCHK Flow Diagram

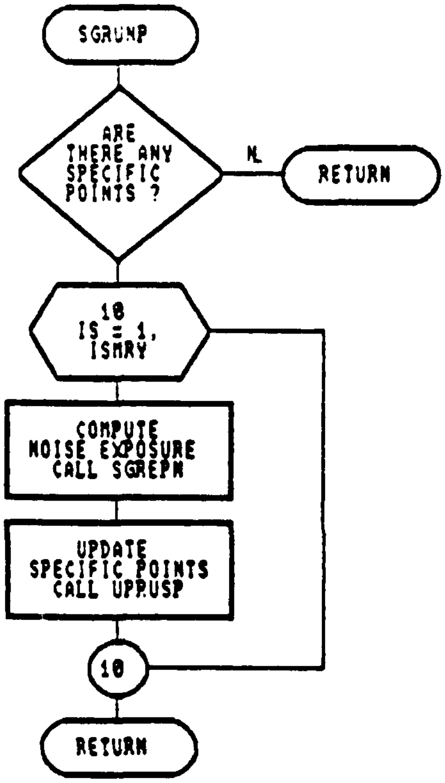

Figure 43. SubProgram SGRUNP Flow Diagram

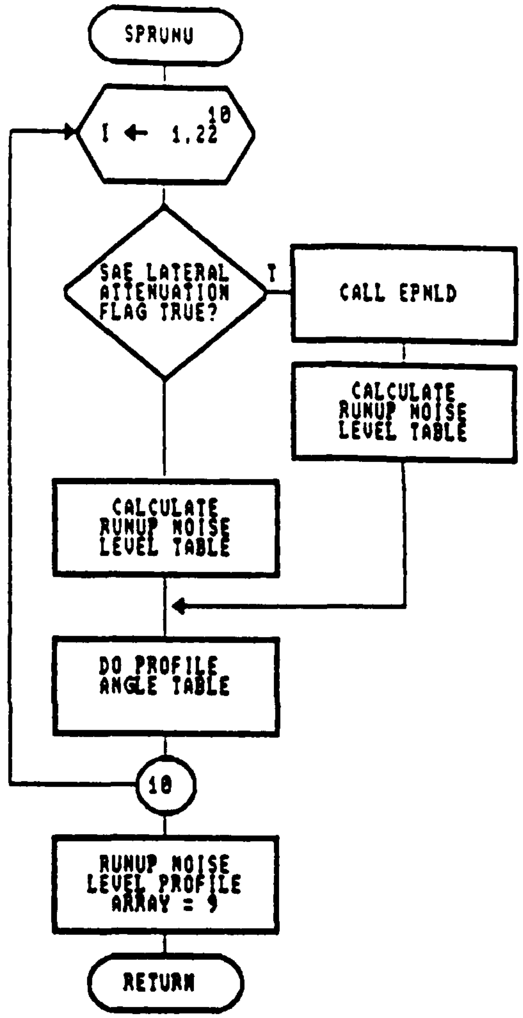

Figure 44. SubProgram SPRUNU Flow Diagram

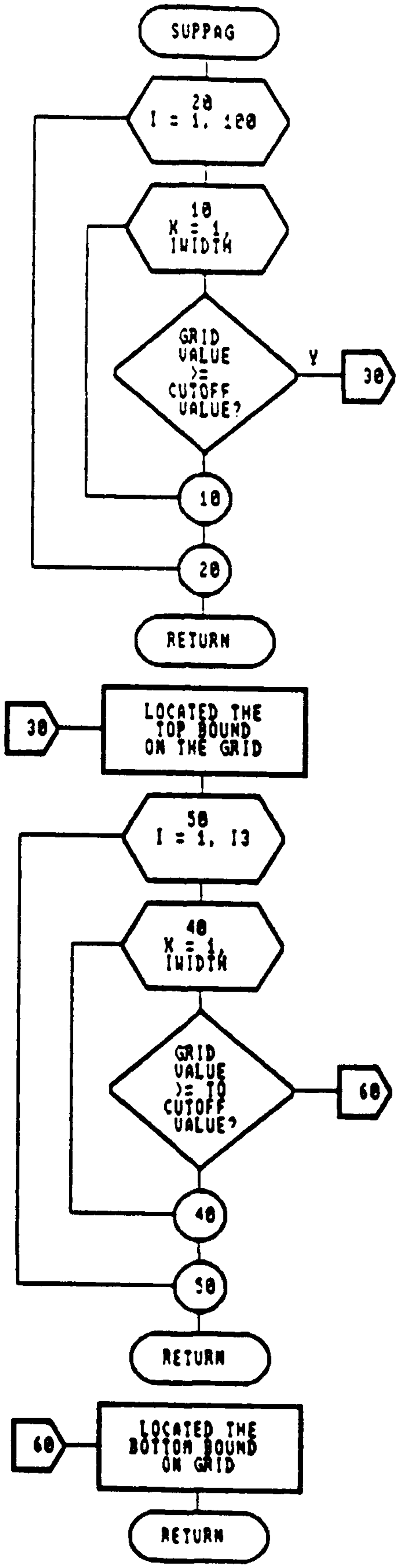

Figure 45. SubProgram SUPPAG Flow Diagram

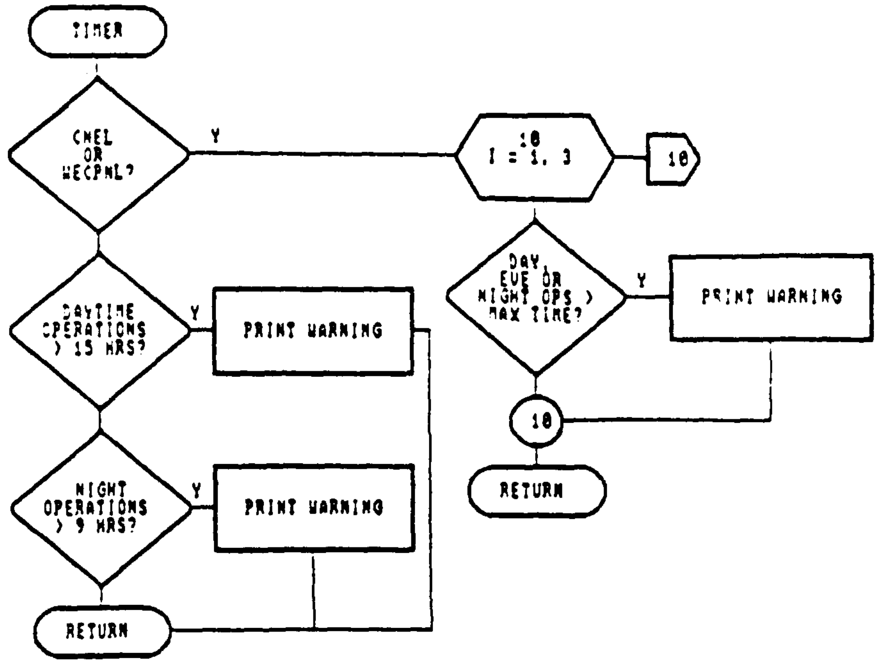

Figure 46. SubProgram TIMER Flow Diagram

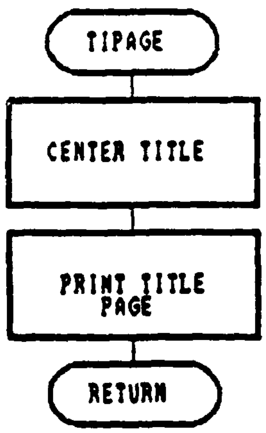

Figure 47. SubProgram TIPAGE Flow Diagram

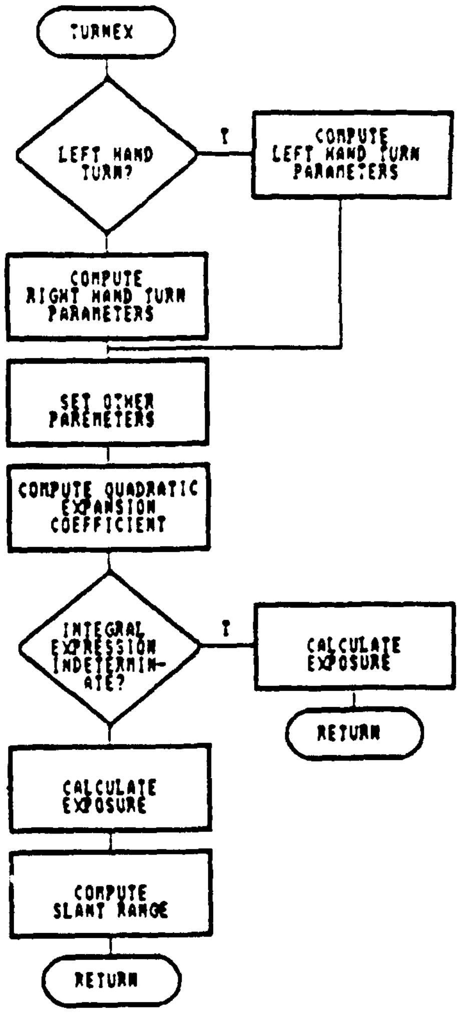

Figure 48. SubProgram TURNEX Flow Diagram

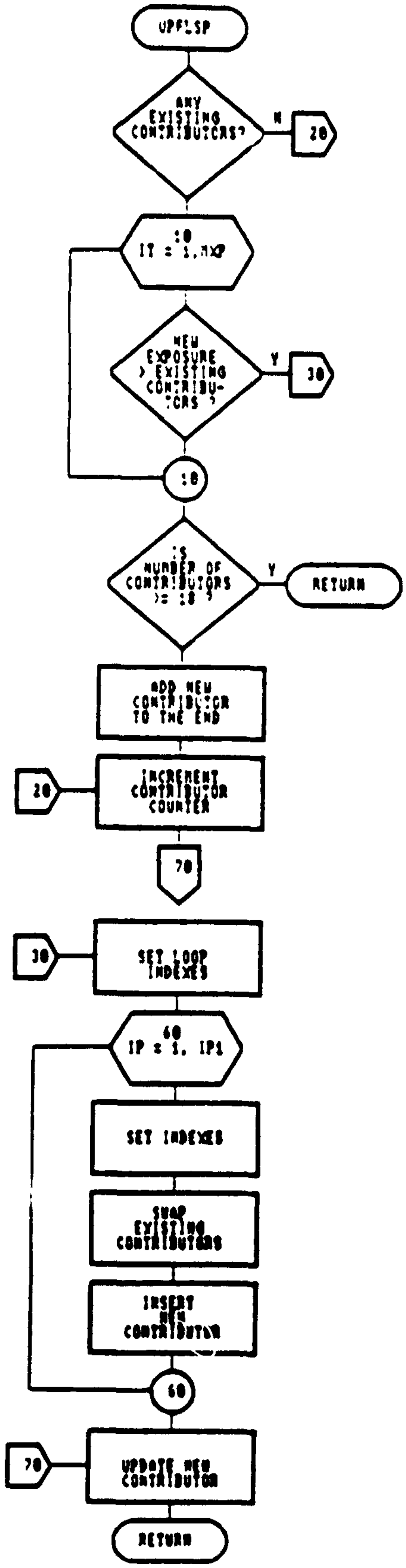

Figure 49. SubProgram UPFLSP Flow Diagram

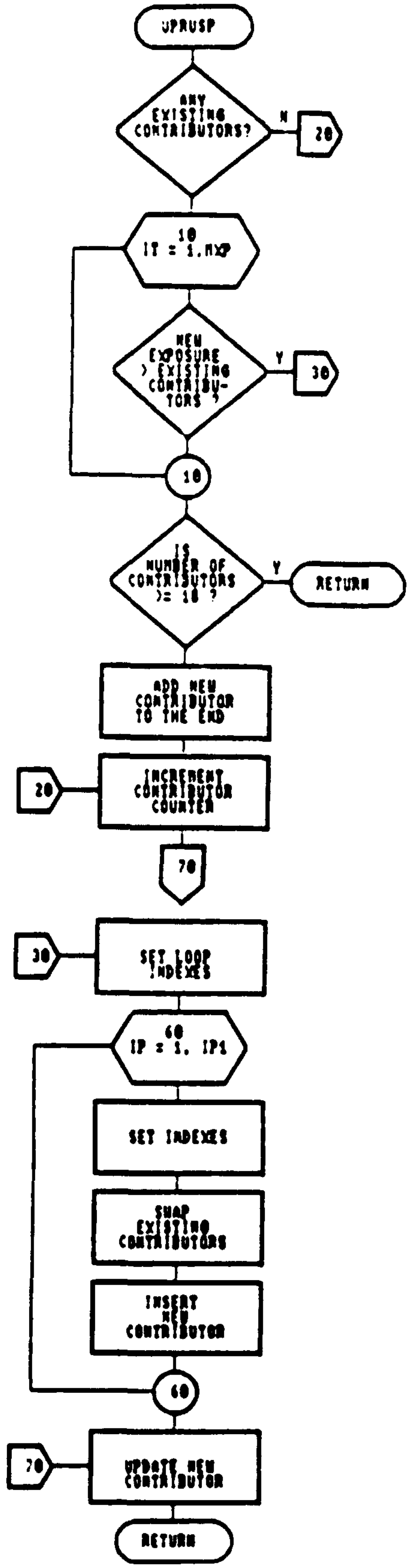

Figure 50. SubProgram UPRUSP Flow Diagram

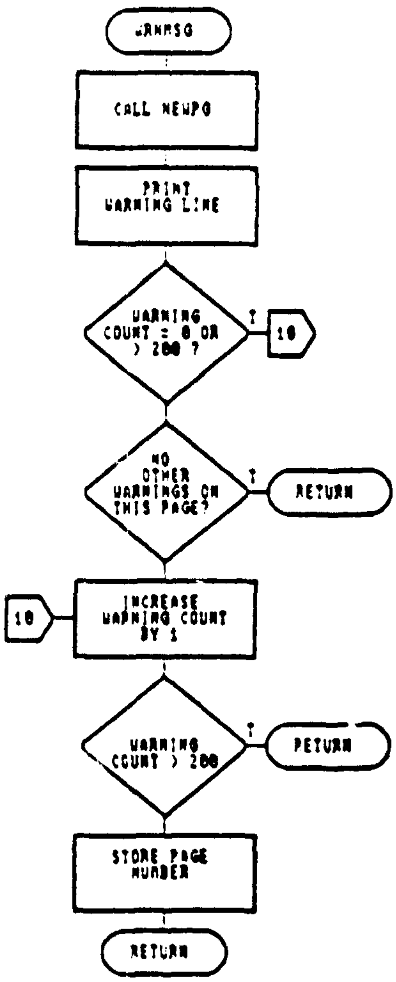

Figure 51. SubProgram WRNMSG Flow Diagram

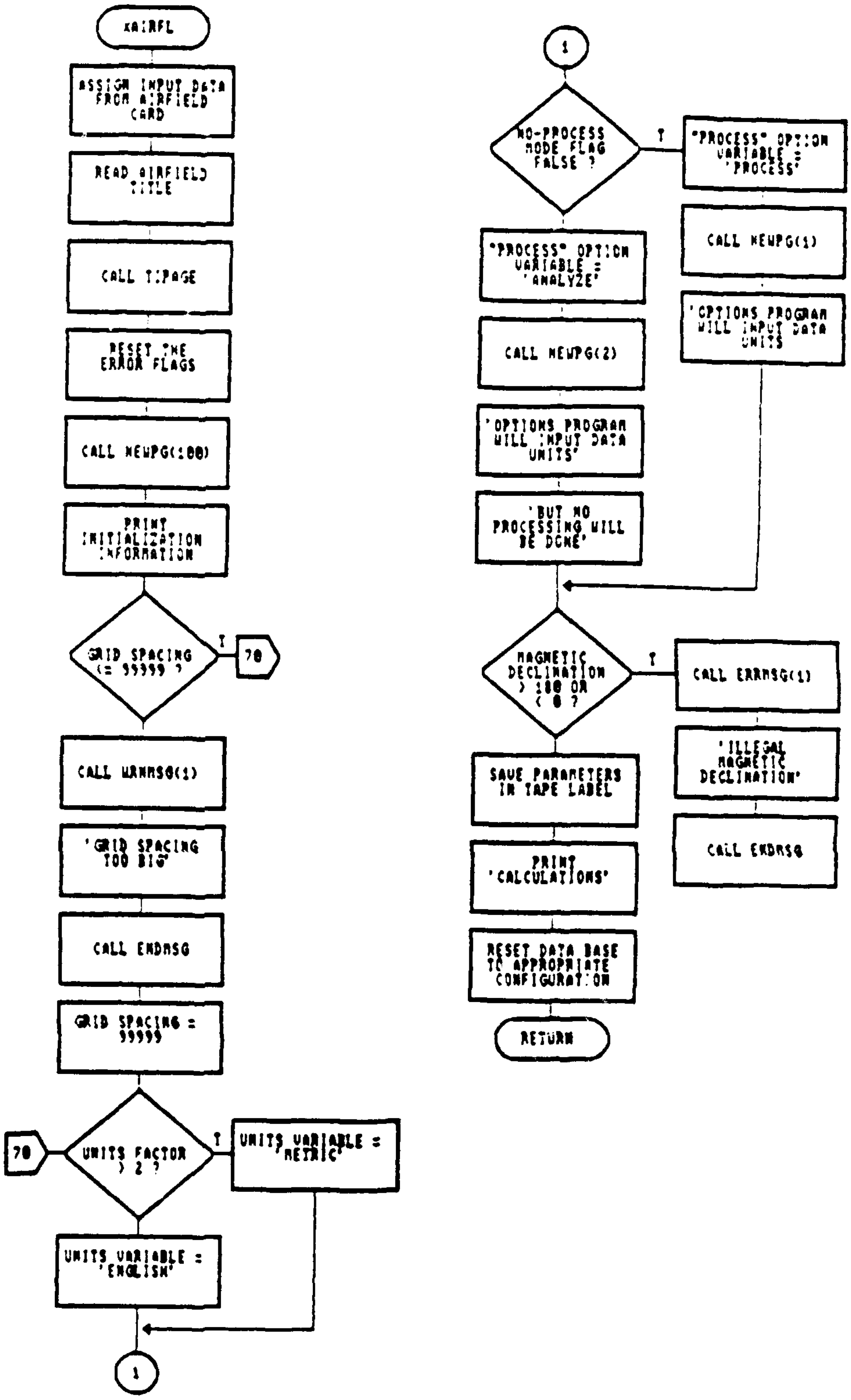

Figure 52. SubProgram XAIRFL Flow Diagram

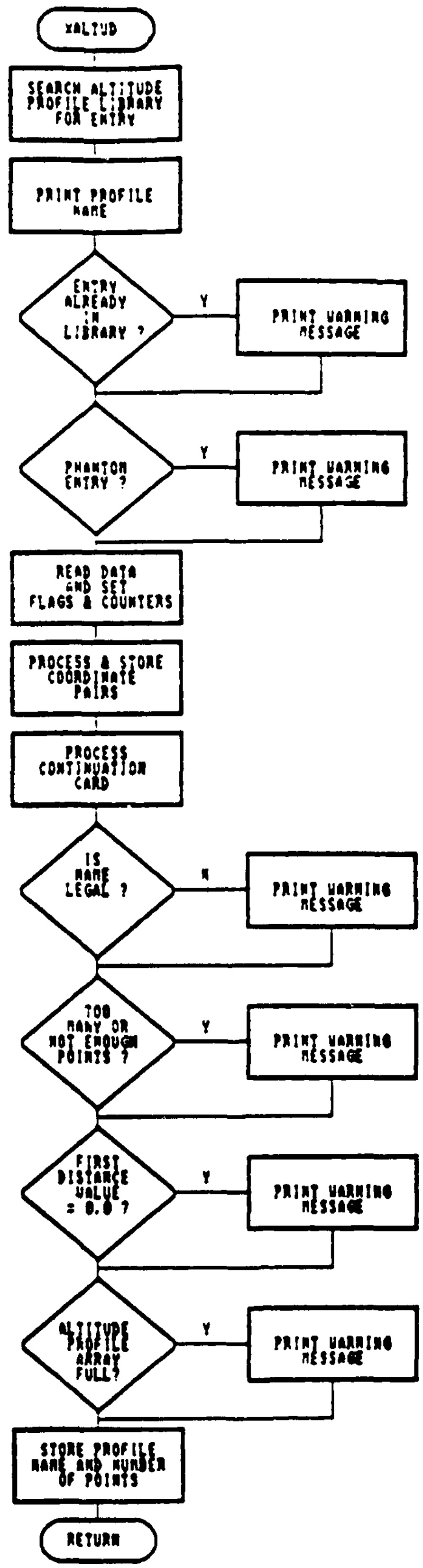

Figure 53. SubProgram XALTUD
Flow Diagram

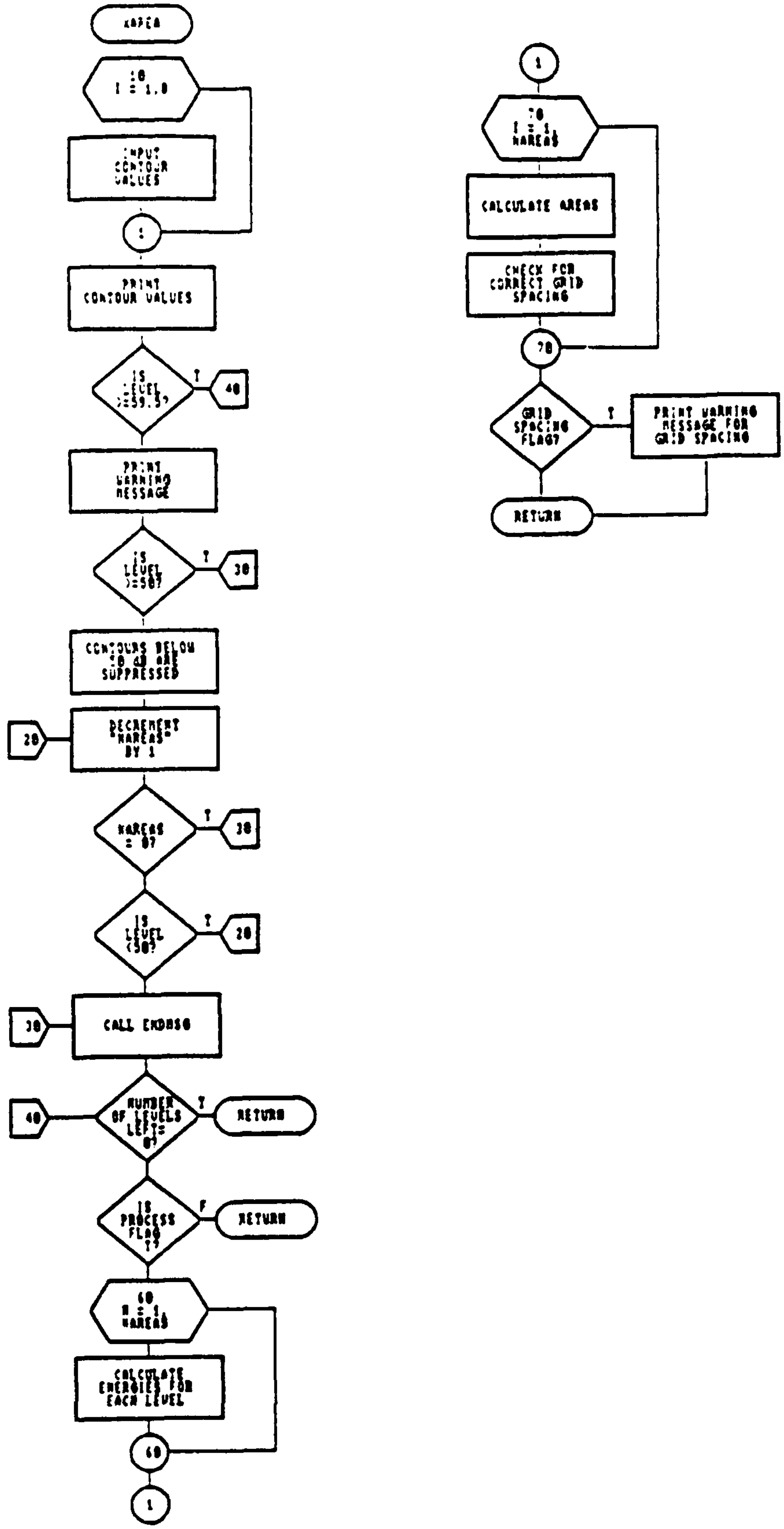

Figure 54. SubProgram XAREA Flow Diagram

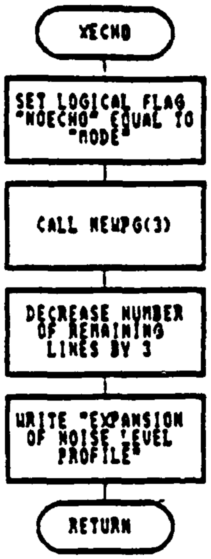

Figure 55. SubProgram XECHO Flow Diagram

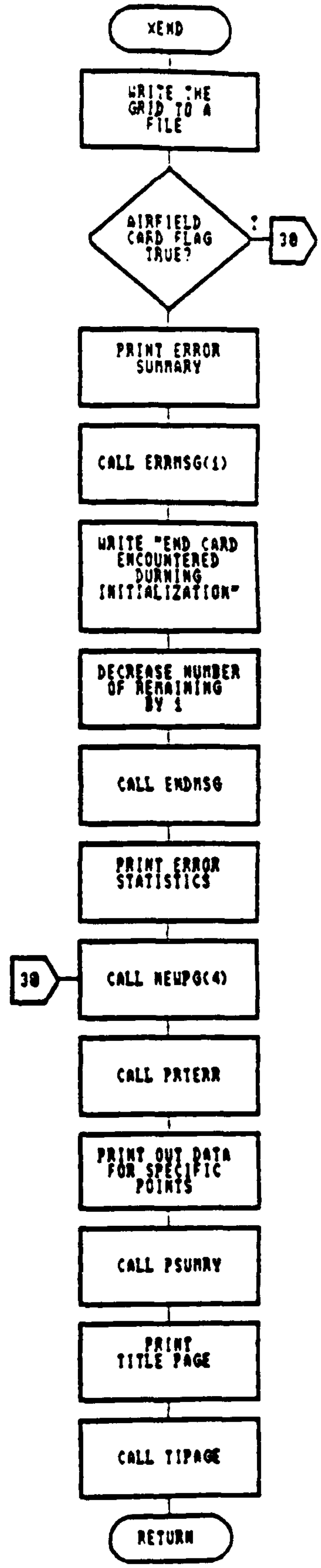

Figure 56. SubProgram XEND Flow Diagram

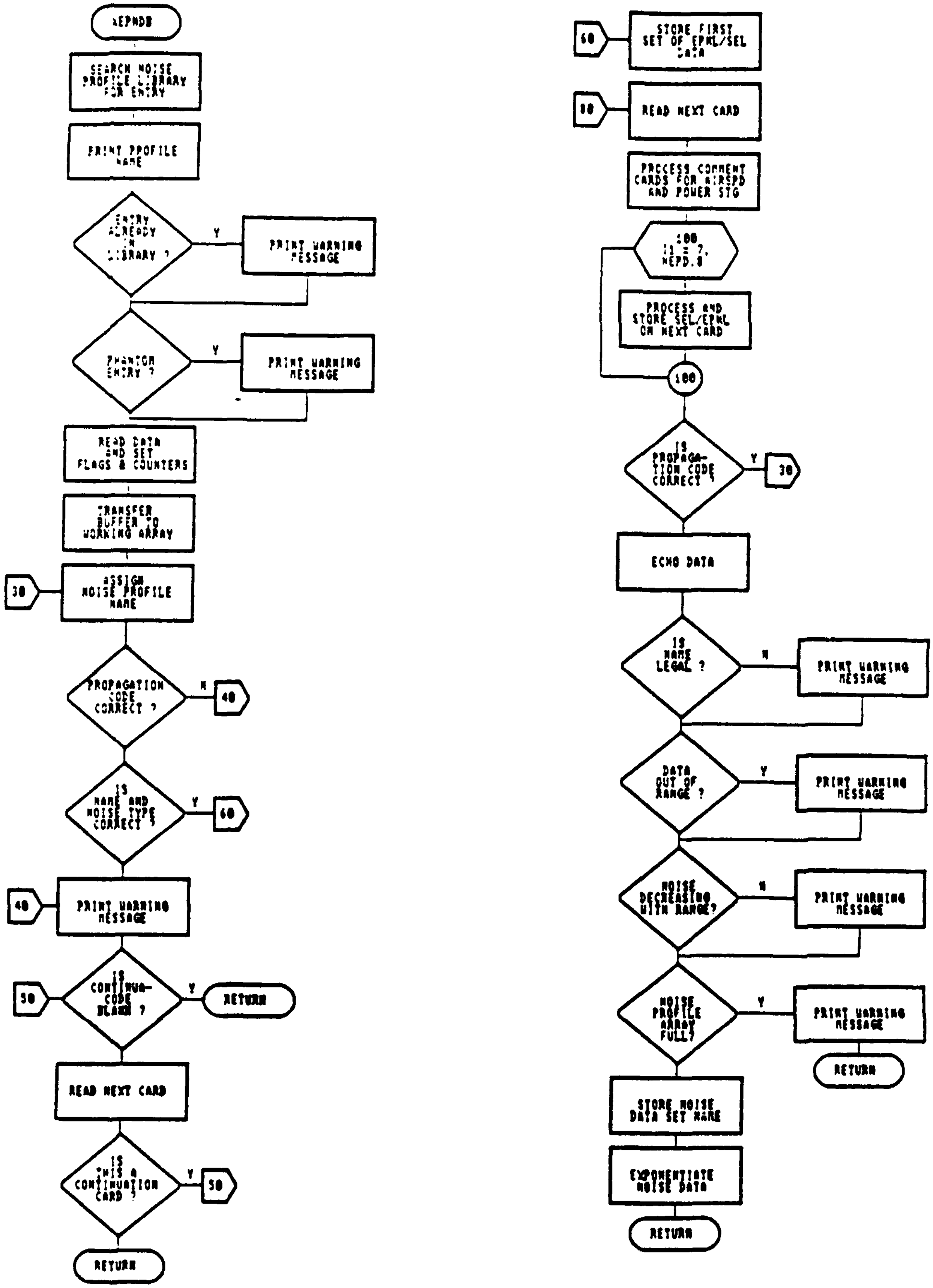

Figure 57. SubProgram XEPNDB Flow Diagram

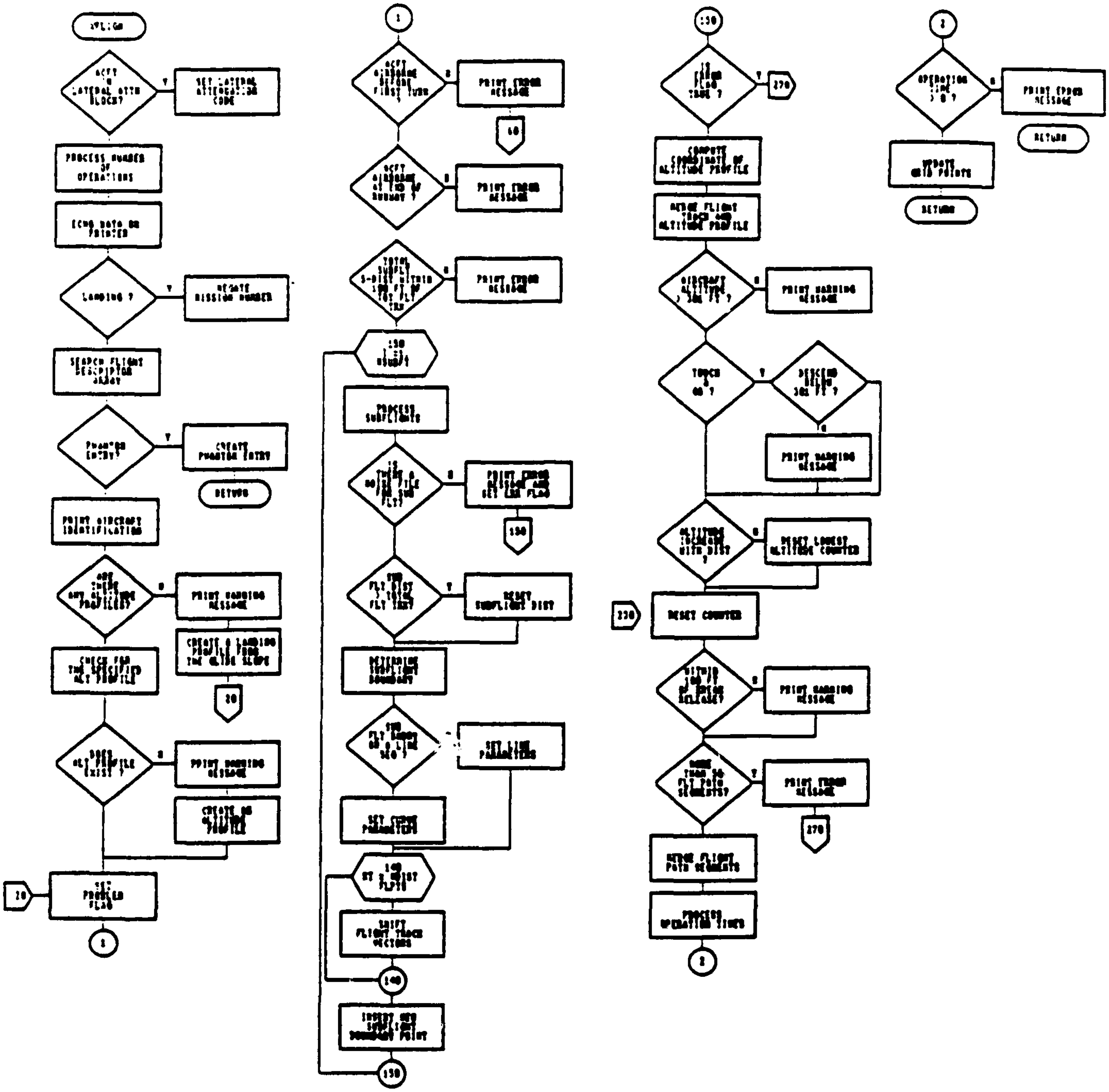

Figure 58. SubProgram XFLIGH Flow Diagram

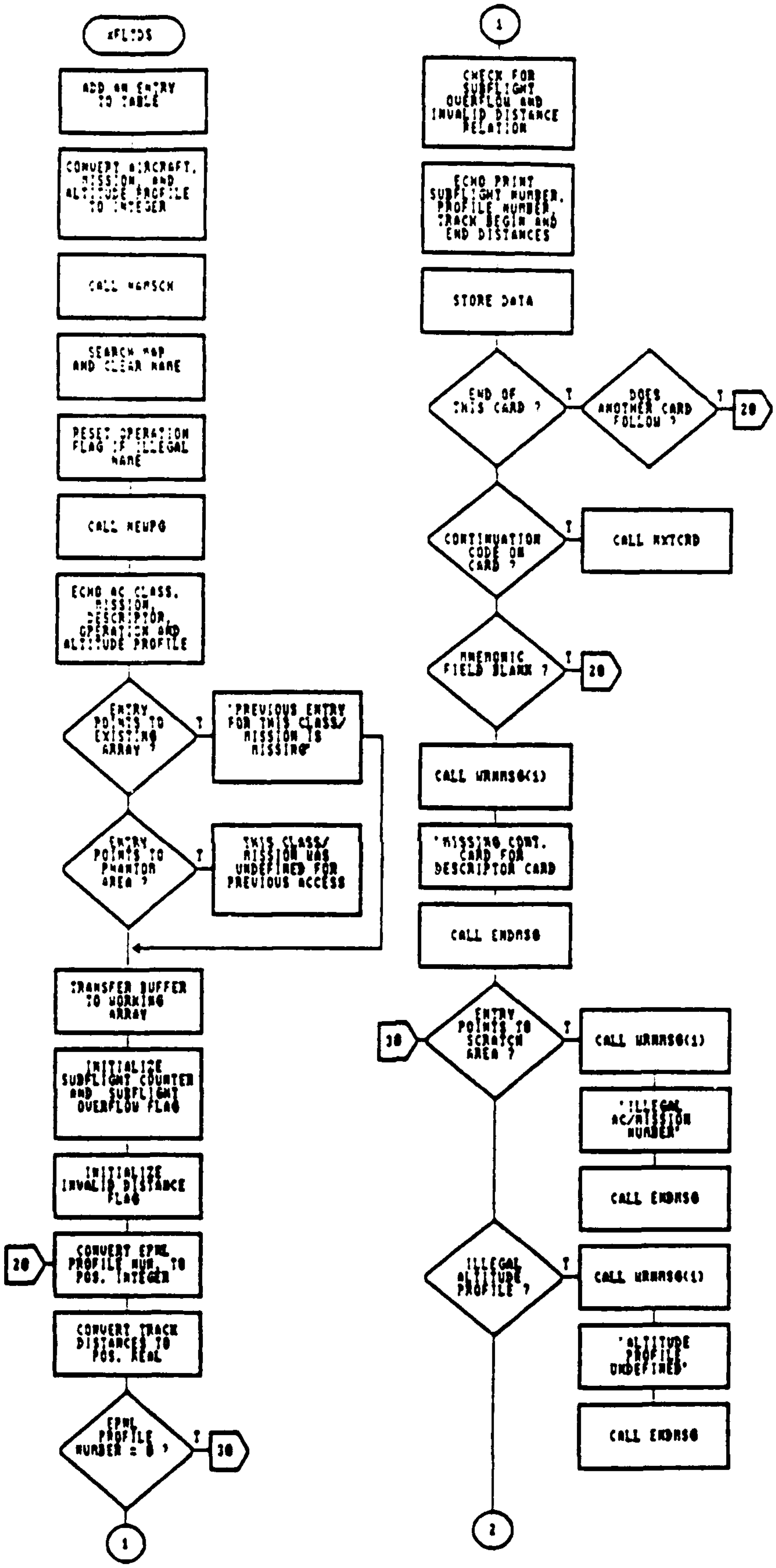

Figure 59. SubProgram XFLTDS Flow Diagram

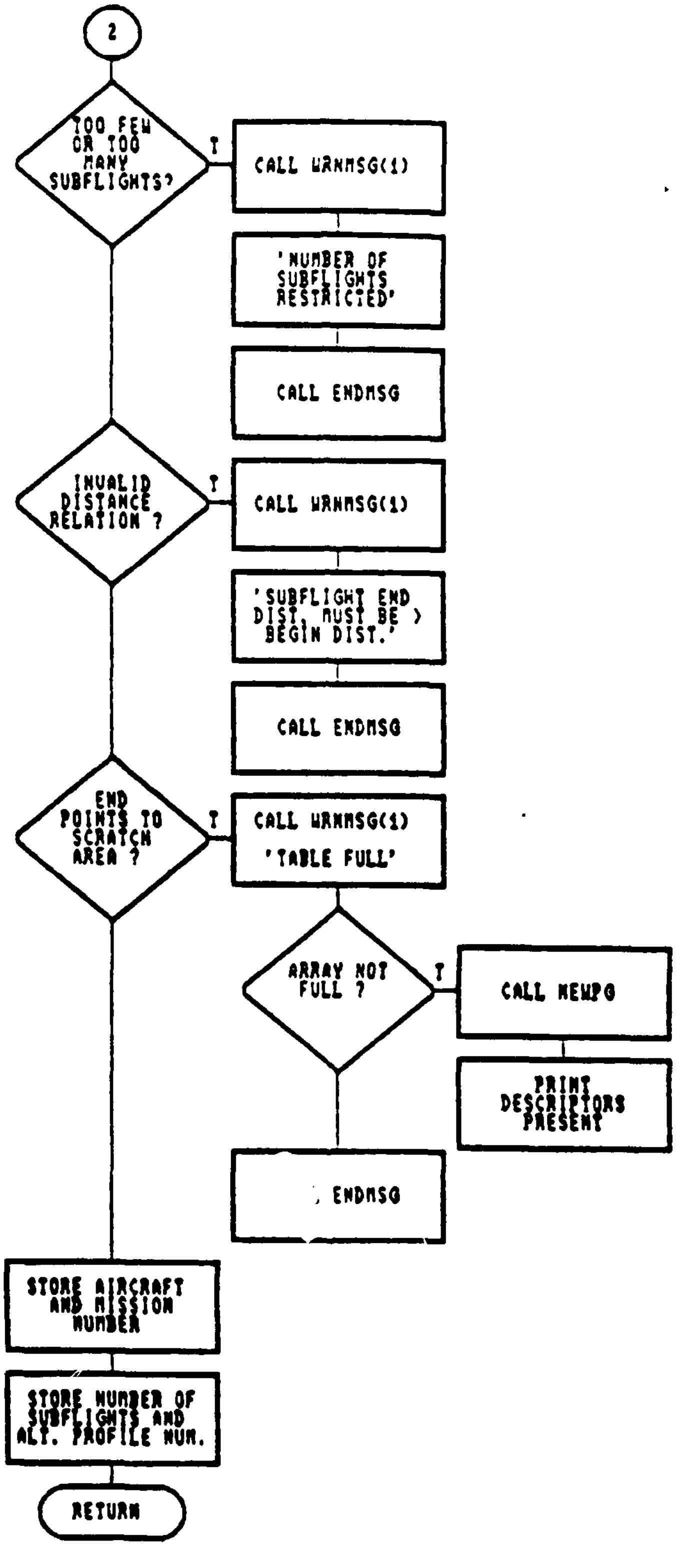

Figure 59-A. SubProgram XFLTDS Flow Diagram (Continued)

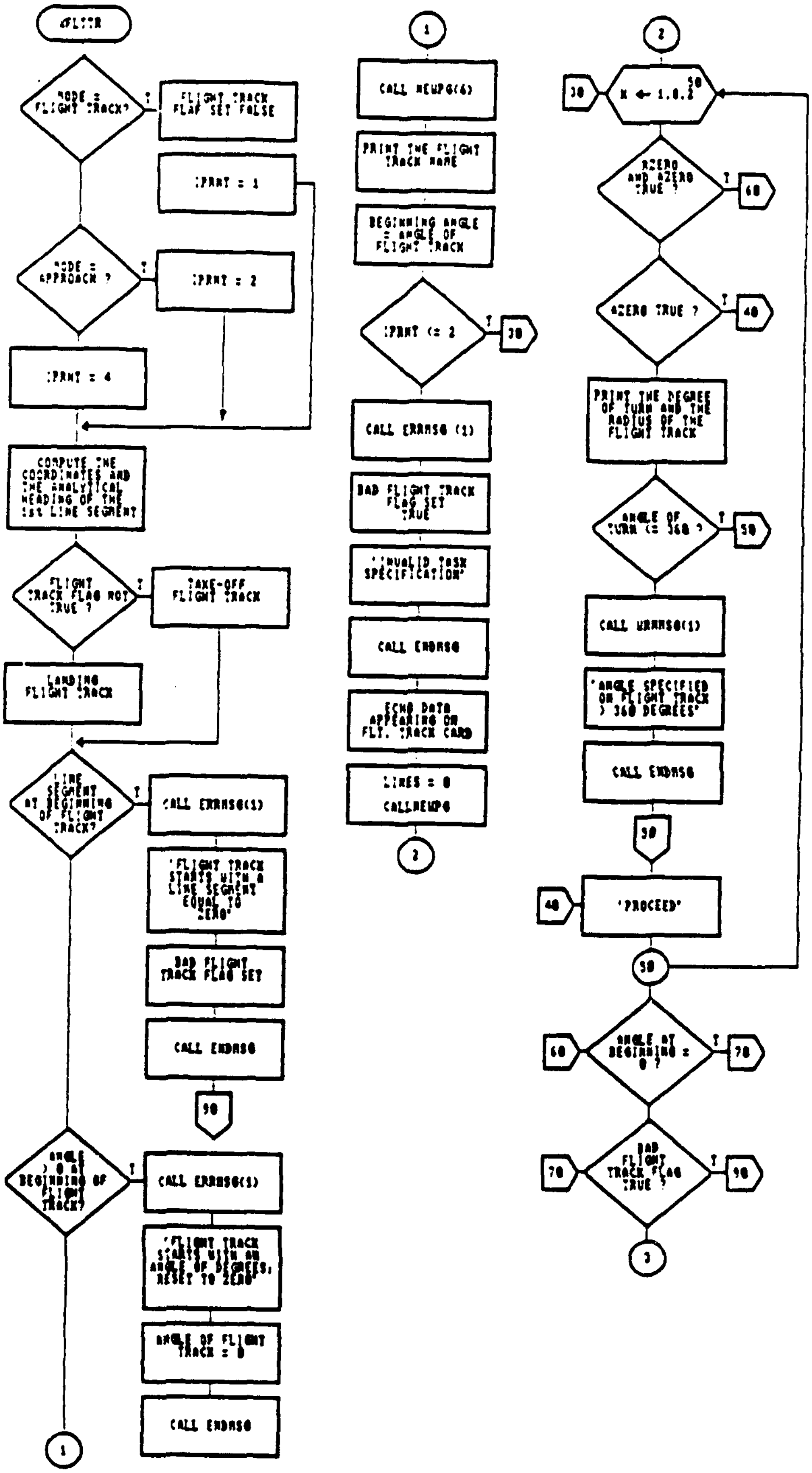

Figure 60. SubProgram XFLTTR Flow Diagram

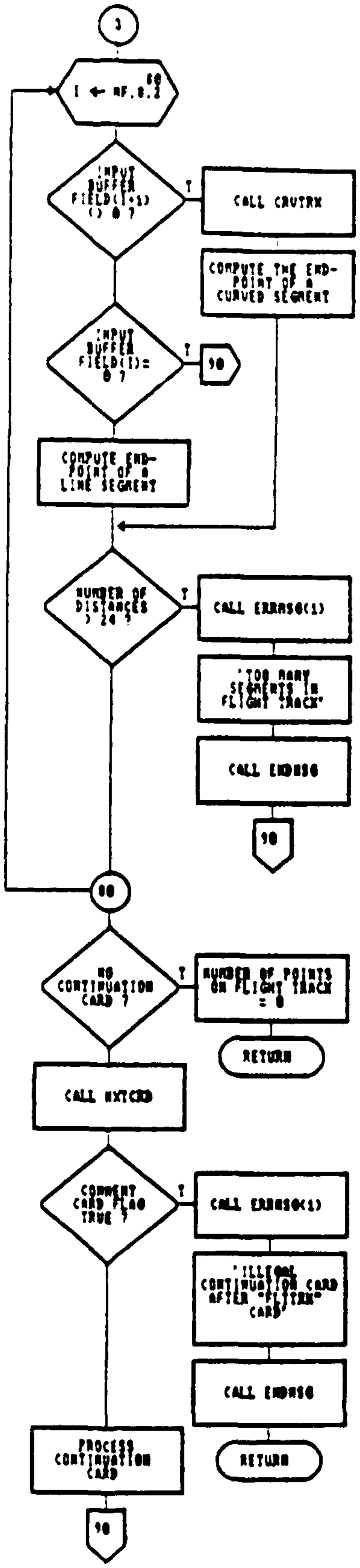

Figure 60-A. SubProgram XFLTTR Flow Diagram

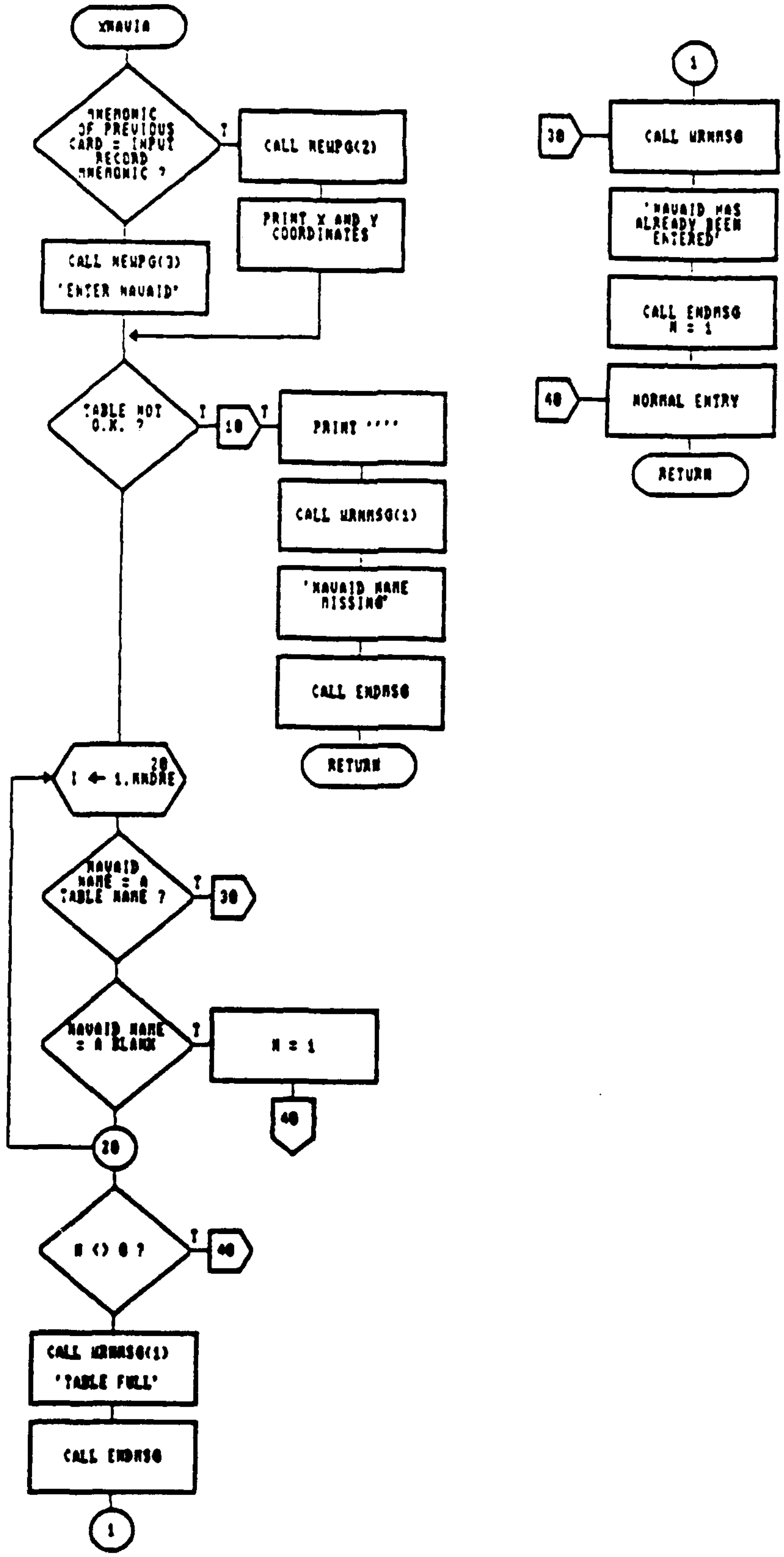

Figure 61. SubProgram XNAVAI Flow Diagram

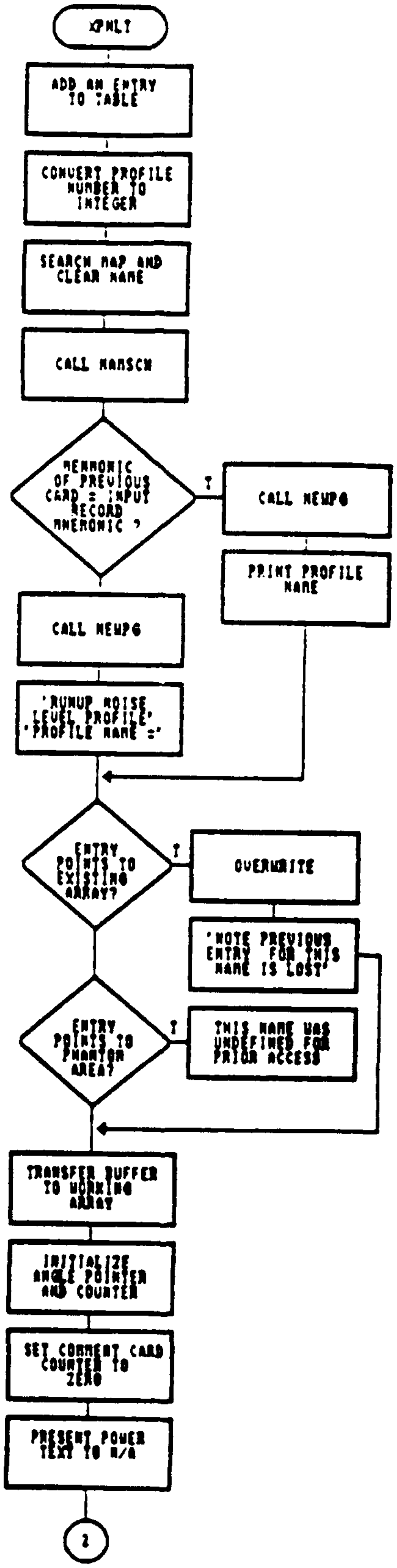

Figure 62. SubProgram XPNLT Flow Diagram

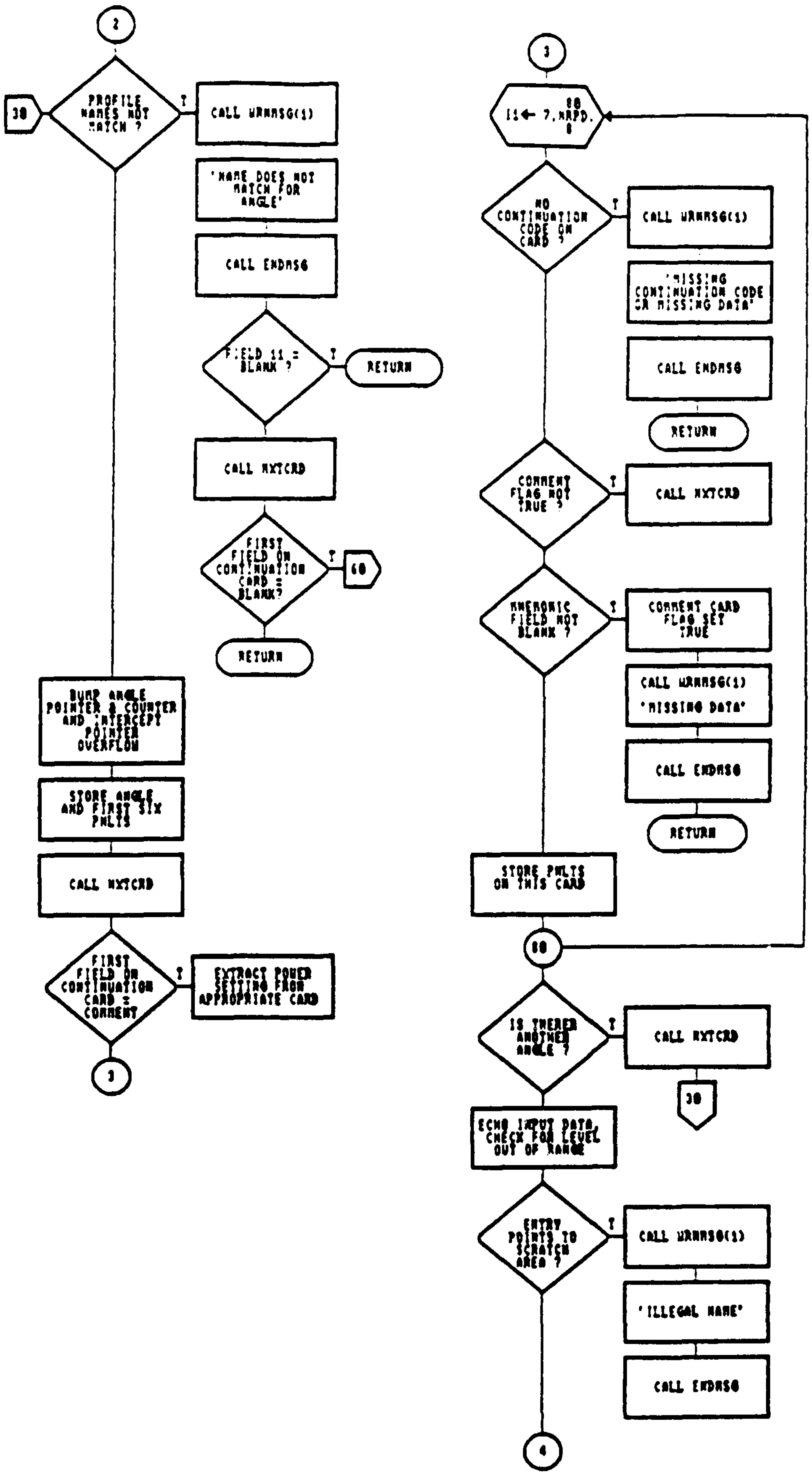

Figure 62-A. SubProgram XPNLT Flow Diagram

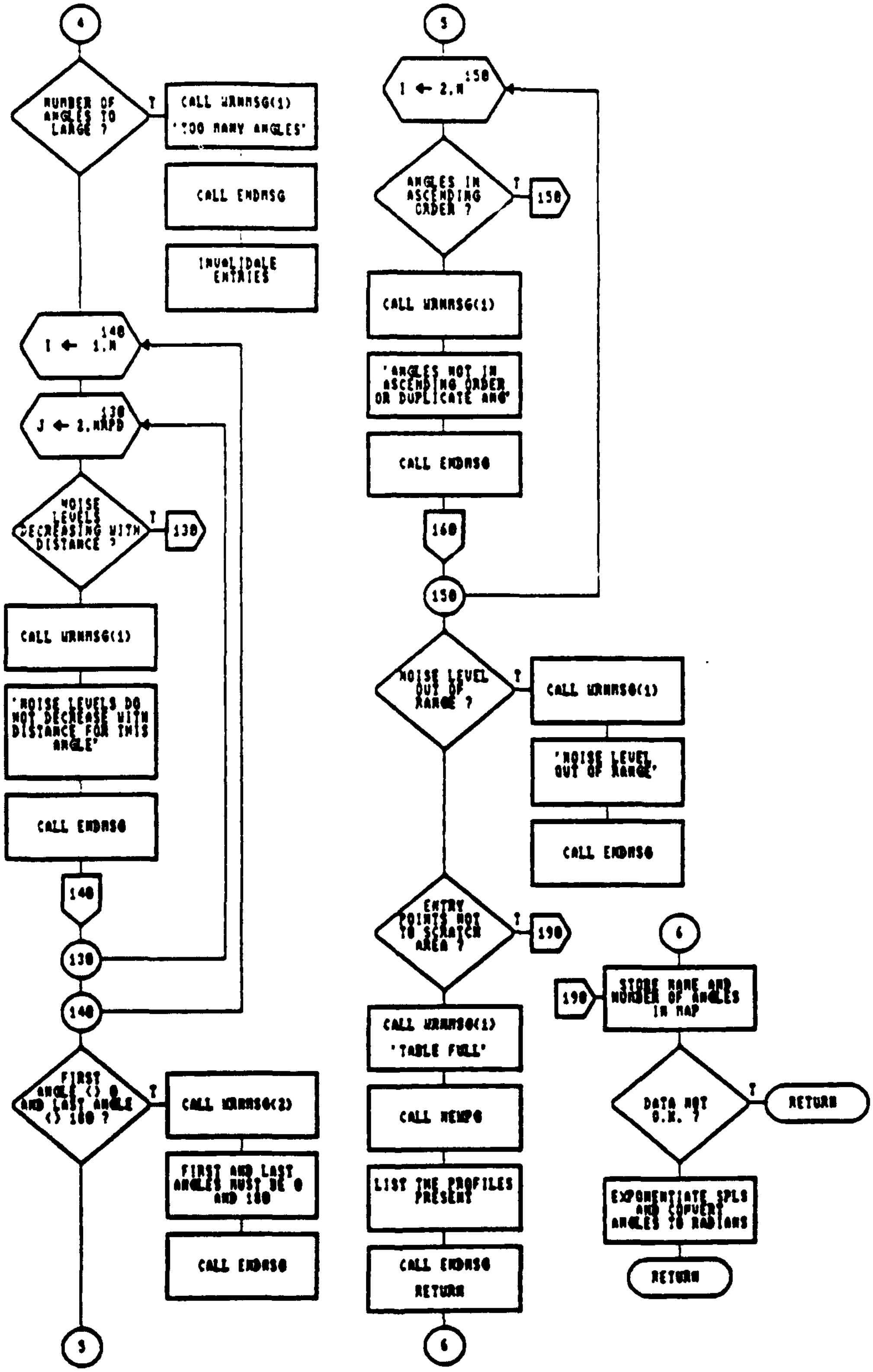

Figure 62-B. SubProgram XPNLT Flow Diagram

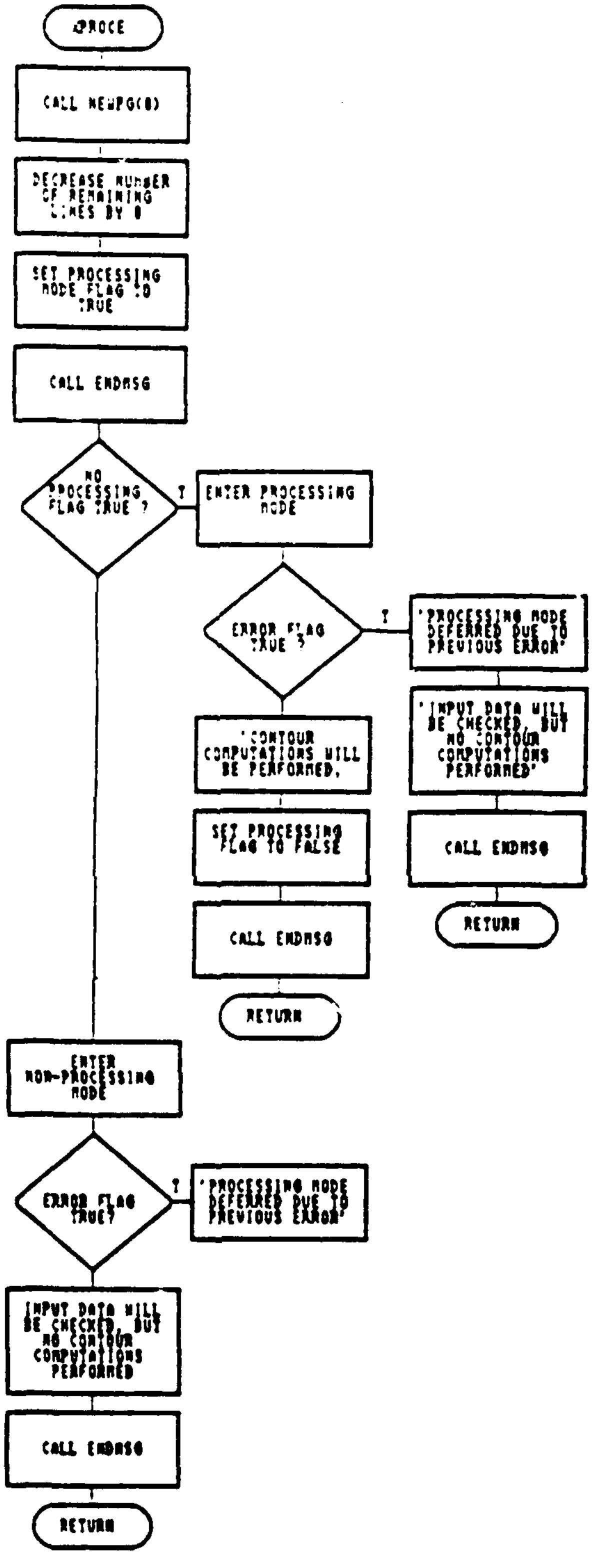

Figure 63. SubProgram XPROCE Flow Diagram

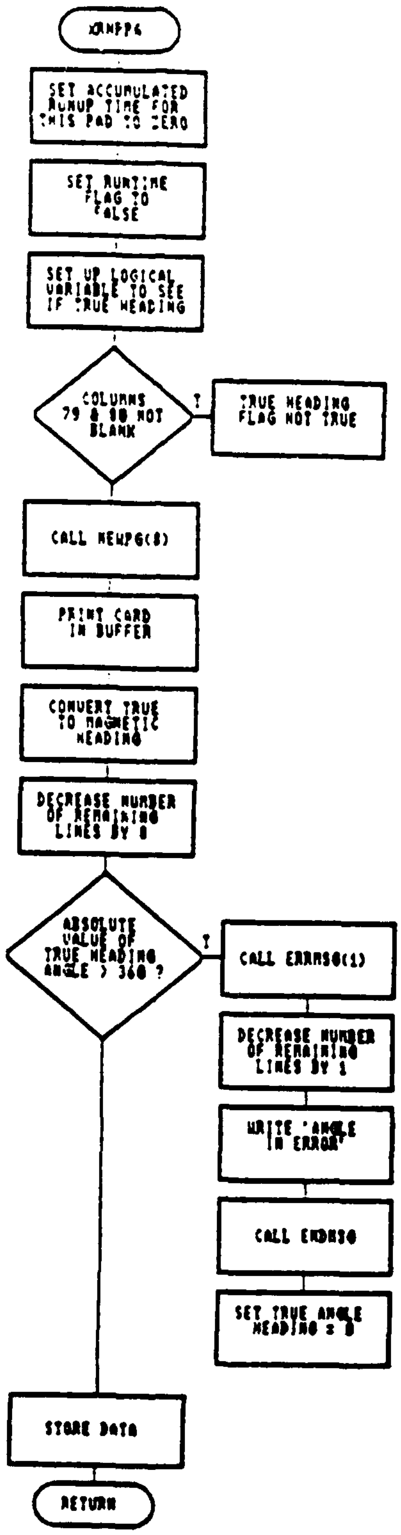

Figure 64. SubProgram XRNPPA Flow Diagram

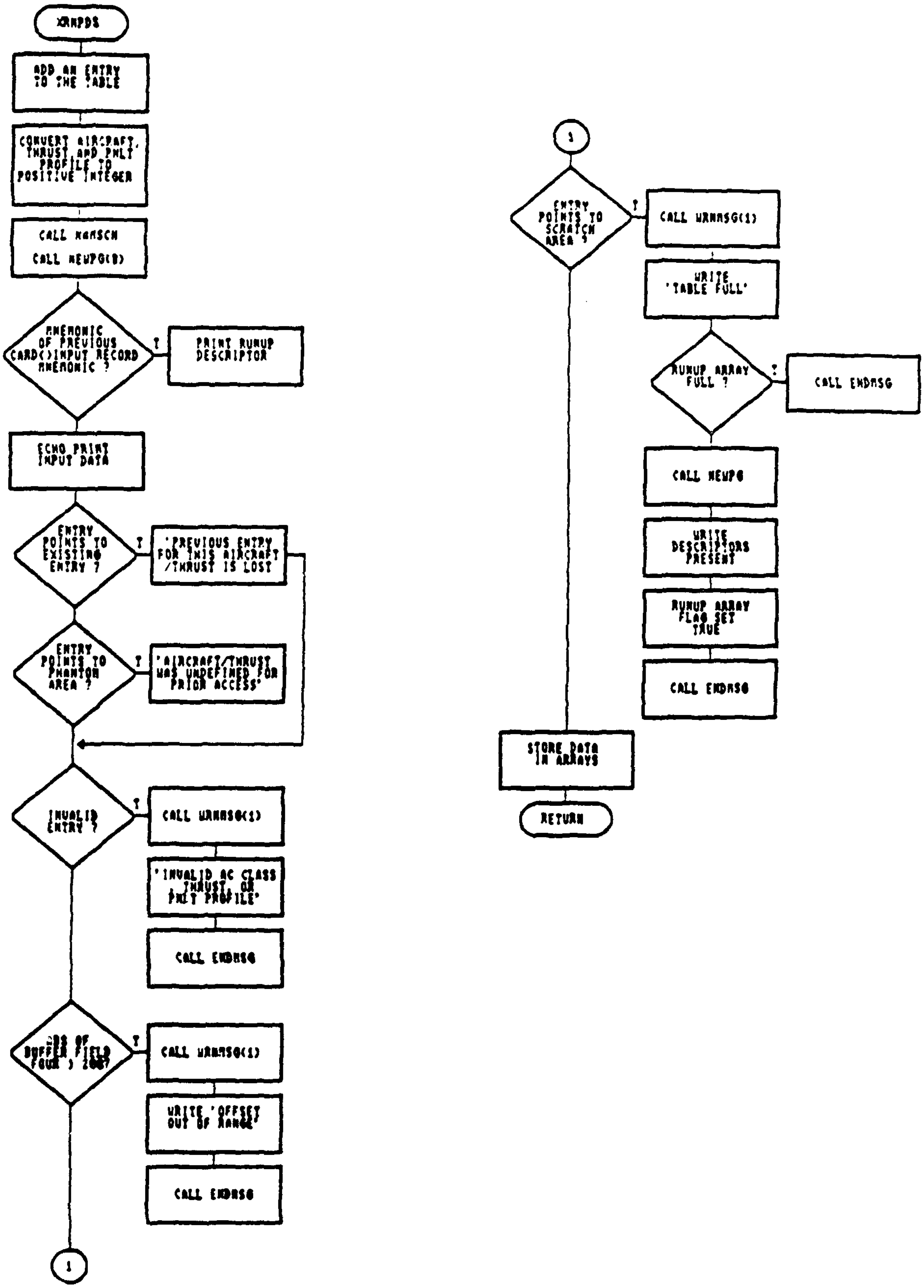

Figure 65. SubProgram XRNPDS Flow Diagram

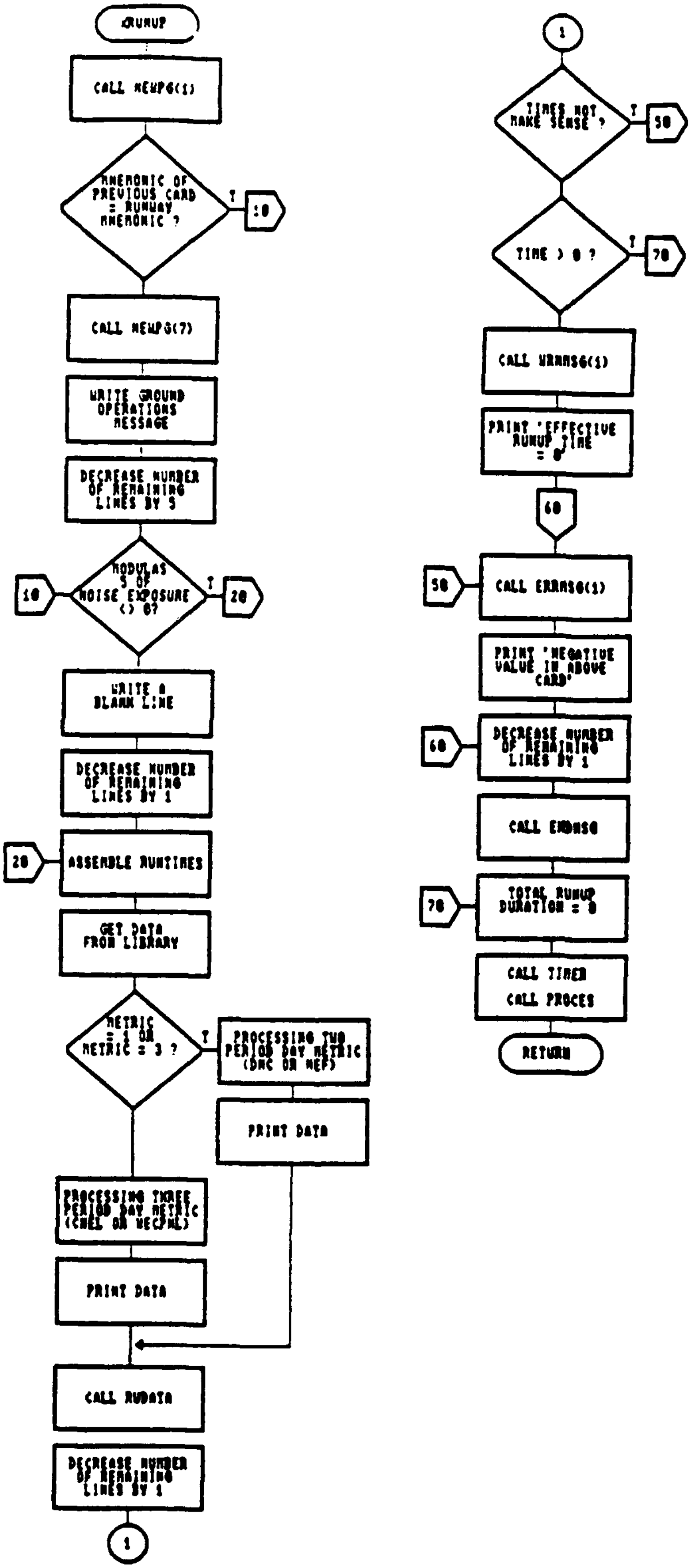

Figure 66. SubProgram XRUNUP Flow Diagram

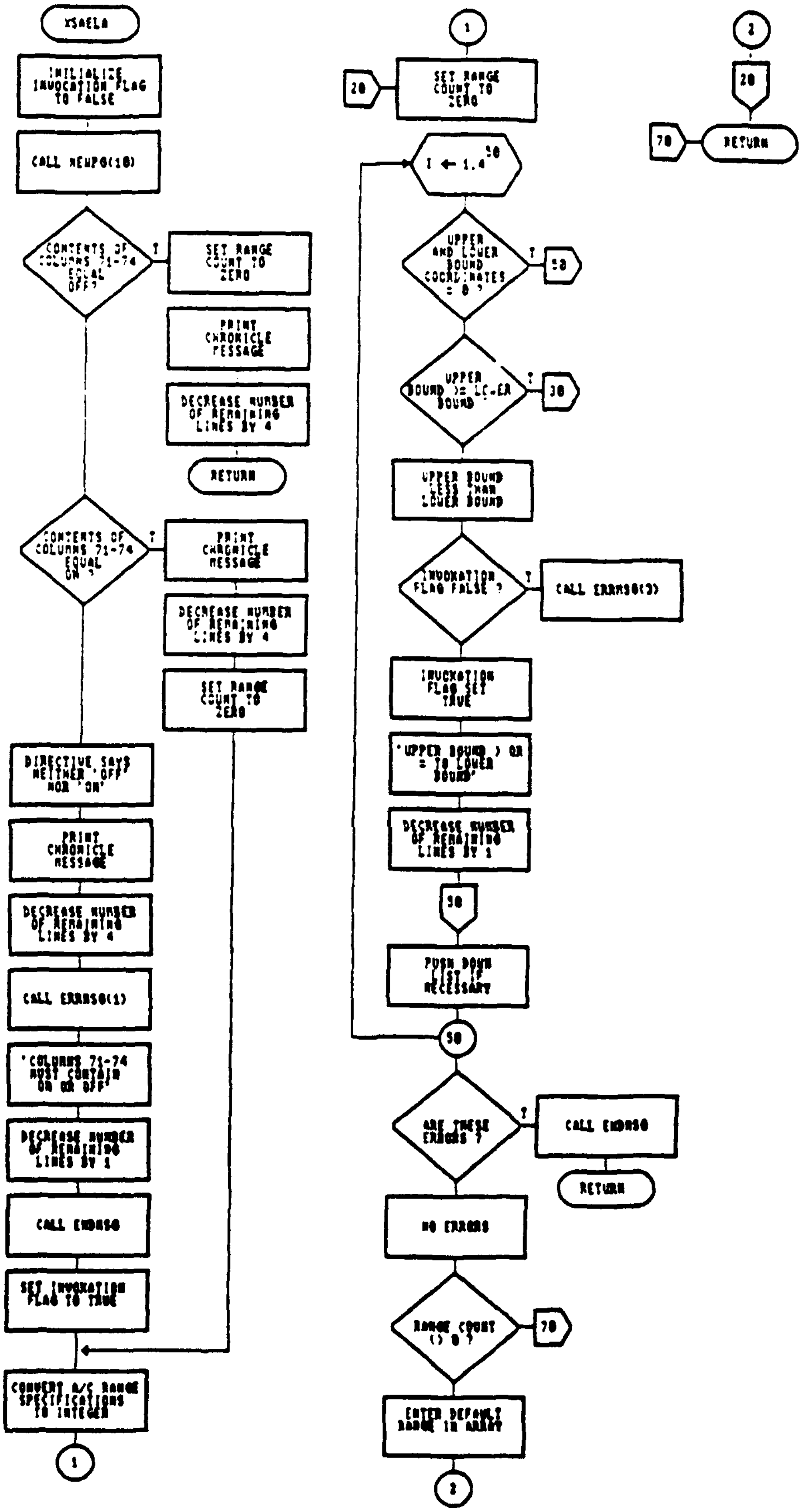

Figure 67. SubProgram XSAELA Flow Diagram

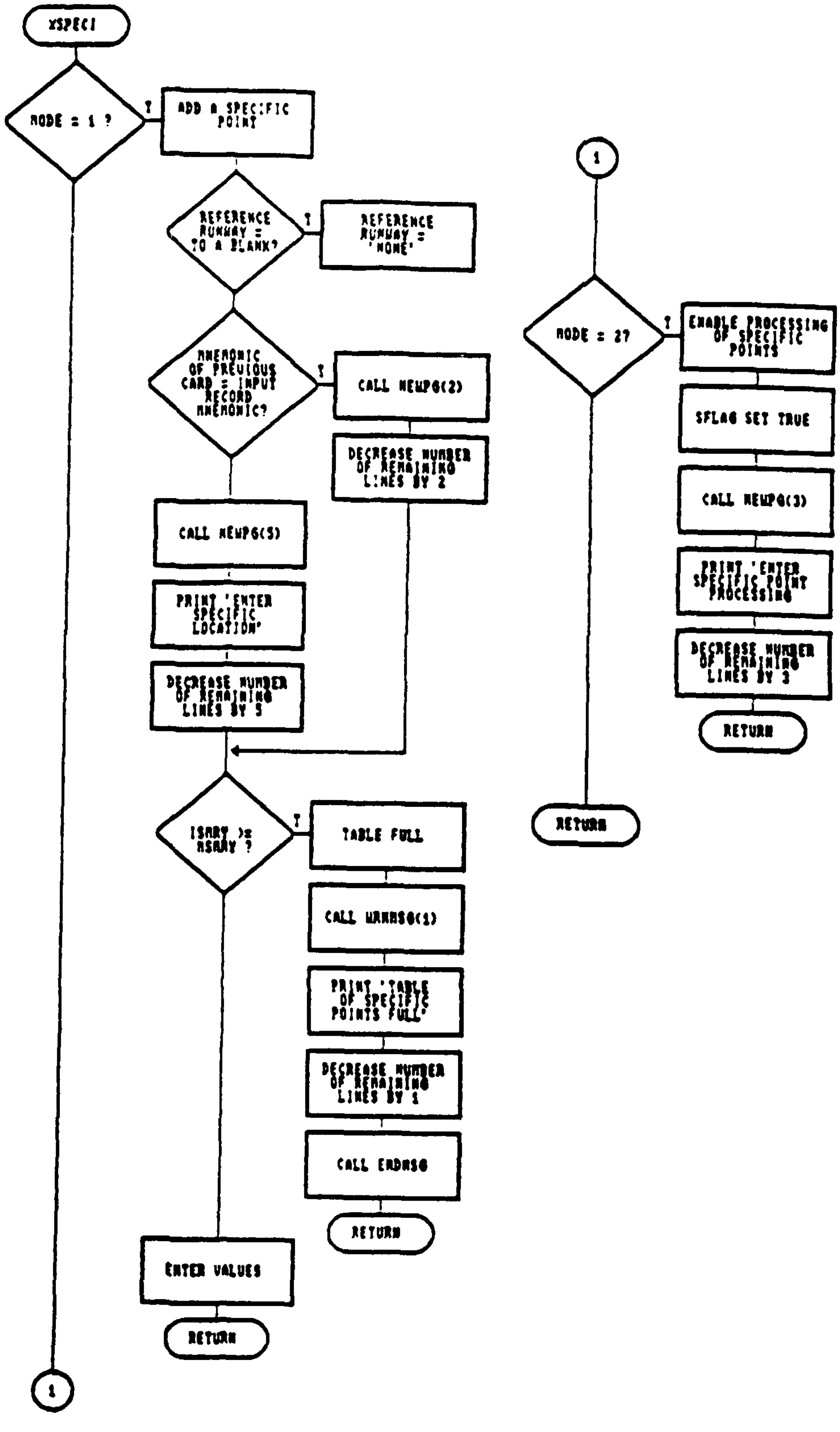

Figure 68. SubProgram XSPECI Flow Diagram

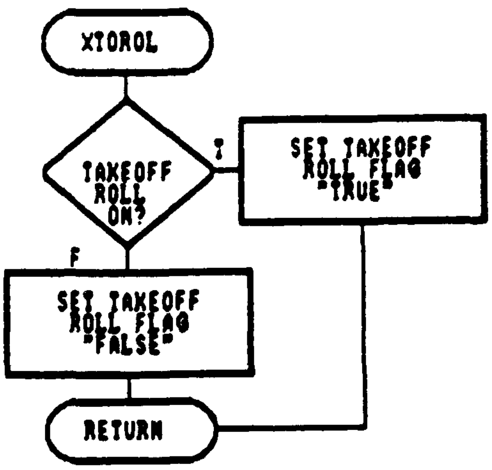

Figure 69. SubProgram XTOROL Flow Diagram

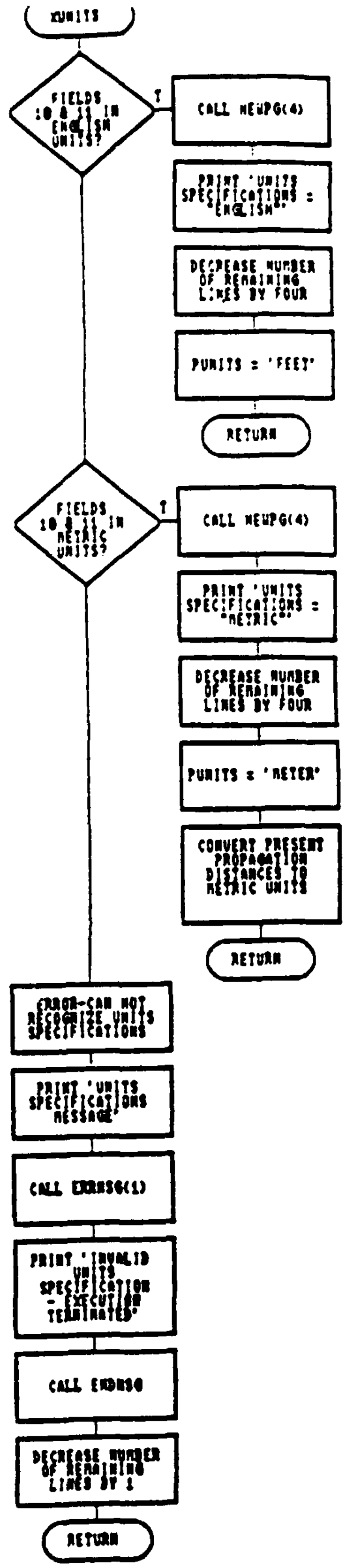

Figure 70. SubProgram XUNITS Flow Diagram

APPENDIX B
Summary of NMAP 6.0 Subroutines

B.1 COMMON VARIABLES

The NOISEMAP program makes extensive use of common storage in the form of labeled common blocks. Use of common storage reduces program memory requirements and allows large amounts of data to be passed between calling subprograms without needing to be passed in lengthy parameter lists.

The various labeled common blocks occur only in the subprograms in which the variables are used. All common block variables are initialized in the BLOCK DATA subroutine. All variables in labeled common blocks are listed in Table 3. The following sections describe the labeled common blocks.

CHRVAR Common

All character variables used in common are contained in CHRVAR.

COMPUT Common

Variables needed to compute noise exposure such as flight path parameters and volume of operations are contained in COMPUT.

CXAREA Common

The variables in CXAREA are primarily used in the calculation of the approximate areas within selected contour lines.

ERROR Common

The variables in ERROR are used to keep track of the page number on which errors and warnings occurred and number of errors and warnings issued by the program.

EXPOS Common

The variables in EXPOS are used to compute the noise exposure for grid points.

FACTO Common

The variables in FACTO are correction factors used in computing noise exposure.

FLIGHT Common

The variables in FLIGHT are primarily used to store flight track and altitude profile data.

GRD Common

Labeled common GRD stores the array of grid points.

INPUT Common

The variables in INPUT are used to input data from the run file and contain the x and y coordinates of the grid origin.

LATATN Common

The variables in LATATN are used in lateral attenuation calculations.

MNEMIC Common

The variables in MNEMIC indicate the type of data that is contained on the input records of the run file. These key words or mnemonics are defined in Section 4 and are also contained in the variable definition list in Appendix B.

NAVAID Common

All variables in NAVAID contain navigational aid information.

OFFSET Common

The variable in OFFSET contains the offset dB factors used in the calculation of noise exposure due to ground runups.

PFRMNC Common

The variables in PFRMNC contain the names of flight and runup descriptors, noise data sets, altitude profiles and size of the various arrays.

RUNUP Common

These variables are related to data concerning runup pads and the minimum threshold value for computing noise exposure due to ground runups.

RUNWAY Common

The variables in this labeled common contain the input data for runways.

STATUS Common

These variables indicate the status of various facets of the program such as the current version number of the NOISEMAP program, the noise measure being calculated and program flags.

SUMMRY Common

The variables in SUMMRY contain input and calculated noise data for specific points.

B.2 MAIN

The purpose of the MAIN program is to open the input and output files, and to control program flow. When NOISEMAP is executed, the first action taken in MAIN is to open the input file (Unit 5) and the output file (Unit 6). The input file is the "run" file and the output file on Unit 6 contains an echo of the input data, error and warning messages, and specific point output if requested. This printed output file is referred to as the Chronicle. The input file consists of data in card image format. Each card image contains 80 characters divided into twelve fields. The first field in each card is a mnemonic. The mnemonic is a key word that identifies the type of data contained on the card. The mnemonic is interpreted in MAIN and a subprogram is called to process the input data on the card. The subprogram returns control to MAIN when the subprogram has completed all processing associated with the data card and any continuation cards.

Only sequence dependent mnemonics are checked in MAIN. Sequence independent mnemonics are processed in subprograms SIMCHK and SELECT. If the mnemonic is not recognized in MAIN then subprogram SIMCHK is called to check sequence independent mnemonics. The following sequence dependent mnemonics are processed in MAIN:

MAIRFL	-	"AIRFLD"	(airfield card)
MRUNWA	-	"RUNWAY"	(runway)
MFLTTR	-	"FLTTRK"	(flight track)
MFLIGH	-	"FLIGHT"	(flight operations)
MRNPPA	-	"RNPPAD"	(runup pad)
MLALTU	-	"LALTUD"	(list altitude profiles)
MRUNUP	-	"RUNUP"	(runup operations)

If sequence dependent mnemonics are not encountered in the correct order, e.g., a runway card is processed before an airfield card, then an error message is issued. The program will continue to process the input file but will not do any noise calculations. However, if 25 errors have been detected in MAIN, then the program will terminate with the following message: "ABNORMAL STOP IN MAIN - EXCESSIVE ERRORS."

B.3 ATRBUT

PARAMETERS: (NEW)

Subroutine ATRBUT is called by FLPATH to merge parameters from the altitude profile and the flight track to create the three dimensional flight path. The parameter NEW indicates whether the point being admitted is from the flight track or altitude profile. The first point admitted to the flight path is always taken from the first point of the flight track. Subsequent points admitted to the flight path are either from the altitude profile or the flight track depending on the value of NEW. Subroutine FLPATH determines whether the next point to be added to the flight path comes from the altitude profile or the flight track and sets the value of NEW. There are two main branches in ATRBUT: one branch processes points from the altitude profile and the other branch processes points from the flight track. Each branch further subdivides the process based on whether or not the point being evaluated is on a straight line segment or on a curved segment. If the point lies on a curved segment and the angle of curvature is greater than 60 degrees, then the angle is subdivided into equiangular segments with smaller angles of curvature.

B.4 CHERCH

Subroutine CHERCH is called by PROCES to update the NOISEMAP grid at points where the flight exposure exceeds a given threshold. The search for grid points of significant flight exposure, i.e., the flight exposure exceeds a preset threshold, is performed using the flight path as a base pattern. Traversal along the ordinate (y axis) is initiated successively from

two points on each flight path segment: an end-point and a mid-point. The point from which traversal is initiated at any instant is called a reference point. After completion of traversal along the ordinate from a reference point, a new reference point is chosen whose abscissa (x axis) is one grid unit to the left or right of the current reference point and whose ordinate is the mid-point of the extent of traversal along the ordinate from the current reference point. This search algorithm results in dynamic tracking of the flight path and thus ensures that no points of significant exposure are missed.

When a significant point is found, the flight exposure at that grid point is assigned a negative value. This prevents redundant computations of flight exposure at the same point for a given flight path. The farthest point of traversal in each direction is kept track of by four pointers. When grid traversal is complete, the points of significance whose signs need to be restored lie entirely in the rectangle bounded by these four pointers.

B.5 CLEAR

Subroutine CLEAR is called by SIMCHK to reset the flight descriptor, altitude profile, flight noise profile, runup descriptor and runup noise profile arrays to zero. Subroutine CLEAR is invoked when SIMCHK reads a "CLEAR" card.

B.6 CPAREA

Subroutine CPAREA is called by XAREA to calculate the approximate area within specified contours. Up to eight contour levels can be evaluated.

B.7 CRVTRK

PARAMETERS:
(XCSTRT,YCSTRT,OLDHD,YCEND,HEAD,XCENT,YCENT,R,ANGLE)

Subroutine CRVTRK is called by ATRBUT, PROCOR XFLIGH and XFLTTR to compute the end point of a circular flight track. The following data are used for compute the end point: beginning point, the analytical heading of the beginning point, and the radius and the angle subtended. The following method is used to calculate the end point and the corresponding heading. At the origin measure a length equal to a radius along the x axis; this section is positive for a left-hand turn. Rotate this section around the origin, clock-wise for a right-hand turn, counter-clock-wise for a left-hand turn. Translate to a coordinate system where the origin is located at the beginning point of the turn. Rotate around this origin so that

the analytical heading at the beginning of the turn is correct. Translate the curved section thus obtained to the point where the turn takes place on the map. The newly found end point and the corresponding heading at that point are returned to the calling subprogram.

B.8 CURVE

PARAMETERS: (X,XARRAY,I,J,K,YARRAY,M,N,L,NPTS)

The function CURVE is called by ATRBUT and XFLIGH to perform an interpolation between two values passed as arguments (XARRAY and YARRAY) and returns the interpolated value.

B.9 ENDMSG

Subroutine ENDMSG is called by many subroutines to print a line of asterisks to terminate a message on the output file.

B.10 EPNLD

Parameters: (INDEX,SLANT,ALTUD)

The function EPNLD is called by FLTEXP, SFLTEX, SPRUNU and SRUNUP to compute the difference between the real EPNL for a flight segment and the air-to-ground value of the EPNL curve. One of two algorithms is used depending on the status of the lateral attenuation flag "FLTSAE." If the flag is `FALSE` then the original NOISEMAP lateral attenuation algorithm is used. If the flag is `TRUE`, then the SAE AIR 1751 algorithm is employed. The flag is set in subroutine XFLIGH.

The SAE AIR 1751 algorithm uses the elevation angle and the lateral distance from the flight track to determine the attenuation relative to air-to-ground conditions. The original NOISEMAP algorithm uses air-to-ground, ground-to-ground or a mixture of the two depending on the sine of the angle of observation.

The sine of the angle of observation is defined as the arcsine of the ratio of aircraft altitude to slant distance. Air-to-air propagation is used for angles with the sine greater than 0.125 and ground-to-ground propagation for sine less than 0.075. Interpolation between air-to-air and ground-to-ground propagation is performed for intermediate values of the sine. The difference in EPNL corresponds to a ratio of energies.

B.11 ERRMSG

PARAMETERS: (I)

Subroutine ERRMSG is called by many subroutines to print an error in the output file and stores the page number on which the error occurs. An error banner is printed for each error and the page number is compared to the last page on which an error occurred. If another error has been printed on this page then no action is taken. However, if this is the first error on this page, then the new page number is stored. At the end of the run, subroutine PRTERR will print a summary indicating the page numbers that errors occurred.

B.12 FLPATH

Subroutine FLPATH is called by XFLIGH to merge the flight track with the applicable altitude profile resulting in the division of the flight track into smaller segments that correspond to the S-distances (segment-distances) of these profiles. At any given time, the point with the smallest S-distance along the flight tack or the altitude profile is entered into the flight path.

The S-distance pointer of the most recently admitted point is advanced. Whenever a point is admitted into the flight path, the attributes of that point such as the altitude are transferred into the attribute vectors of the flight path by calling subroutine ATRBUT. The merging process is terminated as soon as the entire S-distance of the flight track is covered.

In the above description, "flight track" refers to the projection on the ground plane of the flight track information furnished in the input file. The "flight path" is the 3-dimensional version of the flight track which also incorporates the points corresponding to the S-distances of the altitude profile.

B.13 FLTEXP

PARAMETERS: (M,N)

The function FLTEXP is called by CHERCH to compute the noise exposure at a specific grid location due to a flyover. The coordinates of the grid point (M,N) are found in the system in which the aircraft nose is aligned pointing to the positive x-axis.

B.14 GREPNL

PARAMETERS: (I,J)

The function GREPNL is called by GRUNUP to compute the noise exposure at a specific grid point due to a ground runup. The coordinates of the grid point (I,J) are found in the coordinate system in which the aircraft is aligned pointing towards the positive x-axis with the runup pad at the origin. From this location the angle between the aircraft and line of sight is computed. Interpolation between the available angles in the noise data will give the desired exposure which is then corrected for the duration and frequency of the runups at that pad.

B.15 GRUNUP

Subroutine GRUNUP is called by PROCES, SRUNUP and XRUNUP to update the grid with EPNL values of significance due to ground run-ups. The search for grid points of significant EPNL, i.e., above a given threshold, is based on the a priori knowledge that the resulting pattern approximates the shape of a cartioid. Thus the search is bounded by the square that circumscribes the outermost cartioid pattern. The search proceeds along the abscissa form one vertical side of the square to the other. In the vicinity of the cusp of the cartioid, it is possible that the points of significance on either side of the cusp might be ignored. To avoid this o 6 2problem, the logical flag "TRAP" indicates whether any significant point exists at a given ordinate level. Based on this flag, the search is continued or terminated in that direction.

B.16 INTLIZE

Subroutine INTLIZE is called by MAIN to initialize various items which are required before processing can commence. The DB offsets for the John Mills ground runup calculations are initialized and the lateral attenuation flag is turned off. The current date is obtained from the computer for use in the printed output file.

B.17 LINESD

PARAMETERS: (AX,AY,AZ,BX,BZ,OX,OY,SLDIS,ELEV)

Subroutine LINESD is called by SFLTEX to compute the closest point of approach between a line segment in the flight path and an observer. Two frames of reference are used: frame 1 is the main, grid oriented frame, and frame 2 is the frame with the observer at the origin and the flight path parallel to the y-axis and the x-axis is along the slant distance vector.

Calculations are performed in frame 2. Actual computations are a mixture of trigonometry in this coordinate system, and calculations in the ground plane.

B.18 LINEX

PARAMETERS:
(AX,AY,AZ,BX,BY,BZ,AB,ABSQR,IA,IB,CHEAD,SHEAD,OX,OY,EXPOSE,SLDIS,CZ)

Subroutine LINEX is called by FLTEXP and SFLTEX to compute the noise exposure integral for a straight flight path section at a given point. Three frames of reference are used in the calculations: frame 1 is the main, grid oriented, frame; frame 2 is the frame with the observer at the origin, the flight path parallel to the y-axis and the x-axis is along the slant distance vector; and frame 3 is the auxiliary frame with the y-axis parallel to the flight path and the origin at the projection of the slant distance vector intersection point. Calculations are performed - at least logically - in frame 2 actual computations are a mixture of trigonometry in this coordinate system, calculations in the ground plane and vector relationships in the coordinate system in which the origin is at the observer location, but which otherwise is parallel to the grid-based coordinate system.

B.19 NAMSCH

PARAMETERS: (MAP,MNIM1,MDIM2,NAME,NDIM1,XENTRY,CODE)

Subroutine NAMSCH is called by XALTUD, XEPNDB, XFLIGH, XFLTDS, XPNLT and XRUNPDS to search the appropriate array for an input name vector. The routine will return one of the following codes to the calling routine:

Code 0 if the name vector is equal to zero, then the entry points to the scratch area (the last element in the array). Code 1 if there is an empty slot in the array. Code 2 if the name already exists in the array. Code 3 if a phantom entry exists (the negative of the namevector). Code 4 if he array is full.

B.20 NEWPG

PARAMETERS: (LINE)

Subroutine NEWPG is called by numerous subroutines to move the line printer to the top of a new page and to print the airfield identifier with page number on top line if number of lines remaining on current page is less than calling argument LINE. If the number of lines

remaining on the page is greater than LINE, no action is taken. Otherwise, the line count is reset for a full page, the page counter is bumped, and a new page is started. If LINE is zero, then the page counter is set to zero and new page is started.

B.21 PRELUD

Subroutine PRELUD is called by XFLIGH to calculate the necessary parameters for the computation of flight exposure. It computes the radius of curvature, sine and cosine of the aircraft heading on the flight path, tangent of the climb angle and the secant of the climb angle.

B.22 PROCES

Subroutine PROCES is called by XRUNUP and XFLIGH to control the computations of noise exposure at grid points when a FLIGHT or RUNUP card is encountered by calling the appropriate subprograms.

B.23 PROCOR

Subroutine PROCOR is called by XFLIGH to compute the coordinate information for altitude profiles which are specified at given distances along the flight track. The altitude profile is superimposed on the flight track. For the terminal point of each segment of the profile, it locates the preceding point on the flight track. Using the coordinate information and the analytical head of the point on the flight track, it then computes the coordinates of the end-point of the segment on the profile.

B.24 PRTERR

Subroutine PRTERR is called by INTLZE and XEND. When called by INTLZE the error and warning counters are set to zero. XEND calls PRTERR to print error statistics at the end of the run. A new page is started and if any errors or warnings were detected the page number(s) where these errors occurred are listed for easy reference. Up to 200 pages of warnings and up to 56 pages may have errors on them before the program stops keeping track of the page number that the error or warning occurred on. Beyond that point only the number of errors will be the counted.

B.25 PRTGRD

Subroutine PRTGRD is called by SIMCHK to print the NOISEMAP grid values. Only grid values greater than or equal to the threshold are printed; all values less than the threshold are blank.

B.26 PSUMRY

Subroutine PSUMRY is called by XEND to print the summary listings for specific points if specific point processing is requested. Two listings are printed for each specific point: the first listing contains the top 18 aircraft contributors and the second listing, the top 18 runup contributors.

B.27 RDCARD

Subroutine RDCARD is called by MAIN, SELECT and SIMCHK to read individual records in the input file and to place them into the input buffer. If the record has a continuation card then the alternate entry point "NXTCRD" is called from the routine processing the first record. If the record is a comment, then it is printed unless the printing of comments is suppressed.

B.28 RJCHAR

PARAMETERS: (LJCHAR,OUTCHR)

Subroutine RJCHAR is called by UPFLSP to right justify the character variable LJCHAR for the specific point output summary.

B.29 RUDATA

PARAMETERS: (IAIRCR,ITHRST)

Subroutine RUDATA is called by XRUNUP to locate the maximum noise level curves for the ground runup of aircraft IAIRCR and thrust ITHRST. Array "RDMAP" is searched for valid combinations and array "MNLMAP" is searched to see if the required noise profile is available. If the requested data is not available an error is generated and the program will attempt to make a dummy entry to reserve space for the missing item.

B.30 SELECT

Subroutine SELECT is called by SIMCHK to select the noise measure that will be computed by NOISEMAP. The following types of noise measures can be computed by NOISEMAP:

1. Day-Night Average Level (DNL)
2. Community Noise Equivalent Level (CNEL)
3. Noise Exposure Forecast (NEF)
4. Weighted Equivalent Continuous Perceived Noise Level (WECPNL)

The default noise measure is the Day-Night Average Level. If the noise measure is changed from the default, then the appropriate noise profile mnemonics and weighting functions are reset to the appropriate values.

B.31 SFLTEX

Subroutine SFLTEX is called by PROCES to compute the noise exposure due to aircraft flyover at specific points within the area bounded by the NOISEMAP grid. The coordinates of the specific points are found in the coordinate system in which the aircraft is aligned pointing towards the positive x-axis. From this the angle between aircraft and the line of sight is computed. Interpolation between the available angles in the noise data set will give the desired exposure.

B.32 SGREPN

PARAMETERS: (IS)

Subroutine SGREPN is called by SGRUNP to compute the noise exposure due to a ground runup at specific point IS. The coordinates of the specific points are found in the coordinate system in which the aircraft is aligned pointing towards the positive x-axis with the runup pad at the origin. From this the angle between aircraft and line of sight is computed. Interpolation between the available angles in the noise data set will give the desired exposure which is then corrected for the duration and frequency of the runups at that pad.

B.33 SGRUNP

Subroutine SGRUNP is called by PROCESS to compute ground runup contributions at each specific point.

B.34 SIMCHK

Subroutine SIMCHK is called by MAIN to check the input record for a sequence-independent mnemonic, and to process that card. This routine assumes all sequence-dependent mnemonics have previously been checked. If the mnemonic is not matched, then routine SELECT is called in a last attempt to identify the mnemonic. If a match for the mnemonic is not found in SELECT then an error is issued by SELECT.

B.35 SPRUNU

Subroutine SPRUNU is called by SFLTEX to calculate the noise contribution due to takeoff roll for specific point noise level calculations. Two different lateral attenuation methods are used to calculate the takeoff roll contributions depending on the status of the flag FLTSAE. If FLTSAE is "TRUE" then SAE AIR 1751 algorithm is used; if it is "FALSE" then the original NOISEMAP algorithm is used.

B.36 SRUNUP6

Subroutine SRUNUP is called PROCES to calculate the noise level due to takeoff roll for all takeoffs for use in updating the grid. Two different lateral attenuation methods are used to calculate the takeoff roll contributions depending on the status of the flag FLTSAE. If FLTSAE is "TRUE" then SAE AIR 1751 algorithm is used; if it is "FALSE" then the original NOISEMAP algorithm is used.

B.37 SUPPAG

PARAMETERS: (CUTOFF,NBASE,IWIDTH,I1,I2)

Subroutine SUPPAG is called by CPAREA and PRTGRD to determine the first page from the top (I1) to the bottom (I2) which contains a value greater than or equal to a CUTOFF in a vertical set of pages from a printer plot.

B.38 TIMER

Subroutine TIMER is called by XRUNUP to check the accumulated ground runup time against the total number of seconds in the day and night periods.

B.39 TIPAGE

Subroutine TIPAGE is called by XAIRFL, XEND and PRTERR to write the title page on the Chronicle listing. The call from XAIRFL writes the title page at the beginning of the Chronicle li^sting and the call from either XEND or PRTERR writes the title page at the end of the Chronicle listing.

B.40 TURNEX

PARAMETERS: (R,RSQ,PHI,RTGB, RTGBSQ,SECBET,ADJQ,ADJT,OBSX,OBSY CHEAD,SHEAD,CENTX,CENTY,OZ,EXPOSE,SLDIS,ELEV)

Subroutine TURNEX is called by FLTEXP and SFLTEX to compute the noise exposure integral and slant distance for a curved flight track segment. The observer point is transformed to a position in frame of reference where the center of curvature of the flight track is at the origin and the radius vector connecting the center and the first point on the track is along the positive x-axis. The integral is then evaluated and a slant distance is computed. 3.41 UPFLSP (IS,FLEXPO)

Subroutine UPFLSP is called by SFLTEX to update the arrays (CFSMRY and FSMRY) containing the most significant flight events for each location IS with the noise exposure level FLEXPO.

B.42 UPRUSP

PARAMETERS: (IS,RNPEPN)

Subroutine UPRUSP is called by SGRUNP to update the arrays (CRSMRY and RSMRY) containing the most significant runup events for each location IS with noise exposure level RNPEPN.

B.43 WRNMSG

PARAMETERS: (I)

Subroutine WRNMSG is called by numerous subroutines to print a warning identifier and to store the page number on which a warning occurred. A warning banner is printed and the page number is compared to the last page on which a warning occurred. If the page number is the same no action is taken. However, if the page number is different and space is

available in PAGE, then it is sorted; otherwise the number of warnings since PAGE was filled up is kept. Subroutine PRTERR will print this information at the end of the run.

B.44 XAIRFL

Subroutine XAIRFL is called by MAIN to initialize the airfield. The routine reads the airfield coordinates, magnetic declination, airfield elevation, grid spacing and the direction of declination from the first Airfield card. The airfield title is then read from the second Airfield card and the title page is written in the Chronicle. The input data is then checked for errors. An altitude correction factor, ALTCOR, is computed using the airfield elevation.

B.45 XALTUD

Subroutine XALTUD is called by SIMCHK to enter an altitude profile name into array ALTMAP and the altitude profile distance and altitude values into arrays ALTXC and ALTZC respectively. The profile data is checked for errors.

B.46 XAREA

Subroutine XAREA is called by SIMCHK to calculate approximate areas within the specified contours.

B.47 XECHO

Subroutine XECHO is called by SIMCHK to select the expansion mode for printing the noise profile data sets in the Chronicle. Unless an ECHO card is used, printing of the SEL and AL noise profile data sets are suppressed by default. The "NOECHO" flag is set FALSE if an ECHO card is processed.

B.48 XEND

Subroutine XEND is called by SIMCHK to initiate program termination procedures when an END card is processed. This routine creates a disk file for the NOISEMAP grid for use in the PLOTT88 program or to create a grid printout on the printer. Subroutine PRTERR is called to print the error summary, subroutine PSUMRY is called to prepare the specific point summary and subroutine TIPAGE is called to print a title page on the last page in the Chronicle.

B.49 XEPNDB

Subroutine XEPNDB is called by SIMCHK to enter the aircraft flyover noise profile data generated by the OMEGA10 program. The profile name is entered in array INLMAP. The air-to-air data is entered in array INLAG and the ground-to-ground data in array INLGG. The data can be entered in either order although the air-to-air data is normally entered first. If the noise profile name identifier (IDENT) already exists in array INLMAP, then the existing entry will be overwritten. Noise levels are limited to + or - 200 db.

B.50 XFLIGH

Subroutine XFLIGH is called by MAIN to process a FLIGHT card and check for the presence of the associated noise information, culminating in the augmentation of the grid with the flight exposure resulting from that flight. For the aircraft and mission numbers specified on the FLIGHT card, identifiers of the noise profiles are obtained from the flight descriptor array, FDMAP. The presence of these profiles is then checked. If subflight boundaries do not coincide with end-points of flight track segments, the latter are subdivided to meet this criterion. After the creation of the merged flight path, a dope vector (INLPNO) is set up containing the noise profile numbers to be used for the segments within a subflight. Finally subroutine PROCES is called to update the grid.

B.51 XFLTDS

PARAMETERS: (INFLG)

Subroutine XFLTDS is called by SIMCHK to enter flight descriptor data. The flight descriptor identification name is stored in array FDTEXT. The value of INFLG determines whether the entry is a takeoff or landing descriptor: a one (1) signifies a takeoff descriptor and a two (2), a landing descriptor. FDMAP contains the aircraft number, mission number, number of subflights and the altitude profile number. The noise profile name for the subflights are entered in array FLPLST and the beginning and end subflight distances are entered in array FLDLST. If the flight descriptor name identifier (IDENT) already exists in array FDMAP, then the existing entry will be overwritten. If warning(s) or error(s) are printed, then data is not entered.

B.52 XFLTTR

Subroutine XFLTTR is called by MAIN to compute the coordinates of the end-points of the segments on the flight track furnished by the user. Coordinates of the end-point of a straight line segment are computed by using the coordinates of the starting point and the segment length coordinate computation of the end-points of curved segments is accomplished in subroutine CRVTRK. All data appearing on the FLTTRK card is echoed in the Chronicle listing and checked for errors.

B.53 XNAVAI

Subroutine XNAVAI is called by SIMCHK to enter navigational aids. The navaid identifier is entered in array VORNME and the x and y coordinates are entered in array VORMAP. The navaid name is checked against currently known names in array VORNME.

B.54 XPNLT

Subroutine XPNLT is called by SIMCHK to enter the ground runup noise profile data generated by OMEGA 11. The noise profile name is entered in array MNLMAP. The angle data is stored in array MNLANG and the noise data is stored in array MNLVL. If the PNLT profile name (IDENT) to be entered matches an ident already in array NMLMAP, then existing entry will be overwritten. If warning(s) or errors are printed, then data is not entered. An entry N is deleted by setting MNLMAP (1,N) equal to zero. Noise levels are limited to + or - 200 db

B.55 XPROCE

PARAMETERS: (LFLG)

Subroutine XPROCE is called by SIMCHK to set the program processing status flag NOGO either "TRUE" or "FALSE" depending on the value of the argument LFLG. LFLG is "TRUE" for a "PROCES" card and "FALSE" for a "NOPROC" card. The program cannot enter the process mode if the error flag, ERRFLG, has previously been set to "TRUE." The flag NOGO is initialized "FALSE" in the BLOCK DATA subroutine.

B.56 XRNPDS

Subroutine XRNPDS is called by SIMCHK to enter runup descriptors. The descriptor name is stored in array RUTXT. The aircraft identification number and thrust number are

entered in RDMAP and the PNLT profile name is entered in array RUPLST. If the aircraft identification number and thrust number to be entered matches an existing entry in RDMAP, then existing entry will be overwritten. If warning(s) or error(s) are printed, then data is not entered.

B.57 XRNPPA

Subroutine XRNPPA is called by MAIN to initialize a ground runup pad. The subroutine transforms the external runup pad coordinates to internal coordinates, XPAD and YPAD, the time accumulators (TIMOFL) for the runup pad are set to zero and the runup pad heading is converted to a magnetic heading if the input heading is a true heading.

B.58 XRUNUP

Subroutine XRUNUP is called by the MAIN program to compute noise exposure for all runups at a given pad, of a given class of aircraft and at a given thrust. Subroutine RUDATA is called to make sure that the aircraft identification number and thrust numbers are available for the calculations. The runup times are read from the "RUNUP" card and summed for all time groups (day, evening and night) and then checked in routine TIMER to ensure they do not exceed the total number of seconds in a day. Subroutine PROCES is then called to initiate the noise exposure computation. Specific points and the grid are then updated with the noise exposure due to this ground runup.

B.59 XRUNWA

Subroutine XRUNWA is called by the MAIN program to screen and process the data appearing on the "RUNWAY" card. The runway coordinates are transformed into the internal coordinates XBEG, YBEG, XEND and YEND. The runway length (RWYLEN) is computed and checked to make sure it dose not exceed 16,000 feet. The inclination angle of the runway is also calculated. The runway glide slope (GSLOPE) and the location of the landing and takeoff thresholds are read from the input file and processed by XRUNWA. The coordinates of the landing threshold (XLAND and YLAND) and the takeoff threshold (XTO and YTO) are calculated. Data appearing on the "RUNWAY" card is echoed in the Chronicle.

B.60 XSAELA

Subroutine XSAELA is called by SIMCHK to service the "SAELAT" card. The SAELAT card determines which algorithm will be used to compute lateral attenuation: the

original NOISEMAP algorithm or the SAE 1751 algorithm. If the SAELAT algorithm is turned on, the logical flag FLTSAE is set "TRUE" and the SAE lateral attenuation algorithm is used on a selective basis for only those flights whose aircraft identification numbers lie within a specified range. If ranges are not specified on the SAELAT card then the default range is aircraft 800 through 999 which are the current numbers for the civil fleet.

B.61 XSPECI

PARAMETERS: (MODE)

Subroutine XSPECI is called by SIMCHK to enter or list specific point and to turn specific point processing on or off depending on the value of the argument MODE. If MODE equals one (1) then the subroutine processes the name and the x and y coordinates of the specific location at which the LDN levels are to be calculated. The external coordinates are converted to internal coordinates SPX and SPY. If MODE equals two (2) then all the specific points are listed. If MODE equals three (3) then the specific point processing flag, SFLAG, is set "TRUE" and noise exposure is calculated for all specific points even if the program NOGO flag is "TRUE." If MODE equals four (4) then SFLAG is set "FALSE" and no noise exposure calculations are performed for specific points.

B.62 XTOROL

Subroutine XTOROL is called by SIMCHK whenever a "TOROLL" card is encountered to enable or disable the takeoff roll algorithm. The takeoff roll algorithm is enabled by default. The takeoff roll logical flag "TORFLG" is set true in subroutine BLOCK DATA. The takeoff roll algorithm is disabled when the first landing is processed. The MCM will issue a "TOROLL OFF" for a landing descriptor. After the first landing descriptor is processed, the MCM will issue "TOROLL ON" for takeoffs and closed patterns and "TOROLL OFF" for landings.

B.63 XUNITS

Subroutine XUNITS is called by SIMCHK to establish the unit of measure, English or Metric, that will be used by the program for internal calculations and on the output devices. English units (feet) are used in the input file and if "METRIC" is entered on the "UNITS" card, then the scaling factor, DISFAC, is set equal to 3.280840 to convert feet to meters. The propagation distances in array DISTT are converted to meters if the METRIC mode is invoked.

The program default mode is English units. If a "UNITS" card does not contain the words "ENGLISH" or "METRIC" then an error message is issued.

B.64 BLOCK DATA

The purpose of the BLOCK DATA subroutine is to initialize variables in the labeled common blocks.

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